INNOVATION CONSIDERATIONS IN MERGER CONTROL ANALYSIS: COMPETITION LAW AT CROSSROADS

By

Gönenç Gürkaynak

[redacted]

UCL Faculty of Laws

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ABSTRACT

The concept of innovation, which took over a myriad of meanings throughout its history, has been surrounded with controversies and negative connotations before gaining its recent and much more favourable perception. Nevertheless, there seems to be a lingering reluctance to wholeheartedly embrace innovation and fully incorporate it into public strategy, despite economic theorists demonstrating time and time again that innovation is the primary stimulant of economic growth. It is certainly a challenge for competition authorities to strike a balance in enforcement of merger control in innovative markets, especially with today`s digital markets and their fast-evolving, future-oriented and therefore inherently imprecise nature. Even so, the research shows that there is still a way to go before balance can be truly achieved. Thus, this thesis first sets out the “state of play” by tracing the evolution of innovation throughout history and the role of innovation in competition law theory and merger control. It then discusses the competition authorities` approach and enforcement practices in the European Union, United Kingdom and United States, in order to expose the asymmetry, in the way innovation is assessed as a sword and as a shield for competition law enforcement. Although innovation seems to be recognized as a crucial factor in merger control at first glance, this is not sufficient nor unbiased, and the asymmetry runs the risk of perverse enforcement and actually hindering innovation efforts, instead of protecting them. Accordingly, this research maintains that the competition authorities risk falling short of their primary objective of consumer welfare, unless they are willing to closely assess each case by using their own information and analytical resources, notwithstanding where the burden of proof lies, and not hesitating to step outside the traditional methods that do not address the dynamics of the innovative markets.

IMPACT STATEMENT

This thesis provides new and valuable insight into the current state of play in connection with the innovation-related considerations in the review of proposed concentrations under merger control rules, while exploring whether innovation is underappreciated in merger control analysis, and whether there are any potential inconsistencies in enforcement preferences trending in this area. In terms of its academic impact, it is expected to invite scholars to work on the principles that should be applied for the proper and effective functioning of innovation considerations in the framework of merger control analysis. In terms of its impact in private practice of merger control, it is also expected to inspire them to scrutinize whether the standards of proof used for innovative efficiencies in merger control analyses could be set in such a way to better protect and foster innovation - especially in markets where innovation is in the burgeoning stages. Its anticipated impact in terms of the enforcement preferences of regulators and antitrust agencies is to provide them with necessary initial ammunition to focus on adopting principles of a functioning and feasible system that will achieve the necessary balance when reviewing innovation matters in the context of merger control analysis, so that it can fulfil the prime objective of competition law.

To the extent the burden and standard of proof concerning innovation are determined for applicants and enforcers in different merger control regimes, this thesis will be a valuable tool for scholars, practitioners, antitrust agencies and regulators alike in determining the potential inconsistencies in the application of such criteria, which might be observed depending on which side is relying on the innovation considerations. In that sense, one of the particular impacts of this thesis would be recognizing and delineating the limits of a potentially unrecognized or overlooked bias in competition law enforcement, as the first necessary step toward removing it. Since innovation is the main engine of economic growth and welfare maximization in the mid to long term, this thesis is envisaged to contribute concretely to the quality of life and welfare of people by helping scholars, practitioners, enforcement agencies and regulators alike to ensure that the merger control approaches in innovation-intensive markets are not unsympathetic toward innovation, and by providing the foundations to replace any potential bias or

unproductive lip service concerning the integration of innovation considerations into merger control regimes, with more effective and proper principles capturing innovation's significance.

Finally, an indirect but significant impact of this thesis might be in terms of an articulation of a road map, for potential inefficiencies and inconsistencies in integrating sustainability as a relatively new policy preference into merger control, since sustainability goals in merger control might, in the future, be haunted by similar pitfalls pointed at in this thesis on the risk of solely paying lip service to a relatively new and difficult-to-quantify policy goal but not actually taking a concrete and effective step toward it.

TABLE OF CONTENTS

Chapter 1

Introduction

I. Definition of the research question

This research aims to explore the principles for the proper assessment of innovation considerations in merger control analysis. In this context, the discussion focuses on the discrepancy in the approach followed by competition authorities, that is, how and why innovation is seen calculable, concrete and predictable when the competition law enforcer examines its anticompetitive effects, but speculative and mystical when the concept of innovation is used as a defense by undertakings to counter-balance the substantive competition law concerns expressed by the competition law enforcer (which I will call the innovation paradox). In parallel, the research also investigates if the standards of proof of innovative efficiencies in merger control could be set in a way to better protect and foster innovation, especially in the discovery phase. Accordingly, the target is identifying the principles and analytical tools when reviewing innovation matters in the merger control context.

The reason for this research stems from the recognition that enforcement agencies have begun to increasingly distinguish “innovation” as a significant and specific concern in merger control. Clear signals of this approach have culminated in *Dow/Dupont*[1] and most recently demonstrated in *Illumina/Grail.*[2] Having said that, the enforcement agencies adopted this approach as a means to protect the competitive structure of the markets, specifically those innovation-intensive sectors such as the digital or pharmaceutical/agro-chemical markets; and not for the sake of innovation itself. That would be an intermediate objective rather than primary, considering the Commission`s Arrowian view that innovation flourishes in a competitive market. The enforcement agencies` focus in the control of concentrations (be they joint ventures, mergers or acquisitions) is now more visibly directed towards assessing the future effects of the transaction on the innovation spheres and pipeline products, and the language in their reasoned decisions touches upon innovative efficiency. Here, the discussion is whether the agencies are able to

[1] Dow/DuPont, European Commission Case M.7932 – (Mar. 27, 2017)
[2] Illumina/Grail, European Commission Case M.10188 – (Sept. 06, 2022)

protect innovation by merely flagging the concerns they have, or, if they could and should do more, *e.g.*, by allowing the transaction parties more room to maneuver by "hearing" their defenses on innovative efficiency and perhaps, going the extra mile of their own accord and taking on some of the evidentiary burden to more objectively assess the status of and effects on innovation. The research has therefore focused on this very interesting point of debate.

To that end, this thesis will set out the "state of play." First, it will explore the path dependencies with the way the concept of innovation has been theorized throughout history. This analysis is the key to understanding the reluctance to and inherent difficulties of fully integrating innovation goals and concerns in the traditionally static microeconomic framework and more broadly, in the legal system. It will then turn to assess innovation in competition law and in particular merger control as it currently stands. This is aimed to be a normative thesis in that sense, *i.e.* it does not claim to have discovered the ultimate solution or method to the innovation assessment that should be adopted by competition law enforcers, but exposes the asymmetry in the way innovation is assessed as a sword and as a shield for competition law enforcement, despite claims otherwise. It is imperative that we realize that although innovation seems to be recognized as a crucial factor, this is not sufficient nor unbiased; which runs the risk of perverse enforcement and actually hindering innovation efforts, instead of protecting them.

II. Scope and Methodology

Taking into account the above objectives, the research examines and evaluates cases particularly from the European Union ("***EU***"), the United Kingdom ("***UK***`) and the United States ("***US***`) to demonstrate the extent innovation considerations have become, either in the form of a concern or a defense, a central topic of discussion by competition authorities as well as competition law practitioners. Having said this, the aim is not to perform a comparative study of these three jurisdictions in the traditional sense, thus the discussion will not touch upon their institutional structures or how these affect the decisions of the respective authorities, or shape the underlying policies. As the three most developed competition law jurisdictions, the focus shall be on how they approach innovation under their regulatory and enforcement roles; and to demonstrate that currently, even these jurisdictions have not been able to fully

embrace innovation; that they remain satisfied with merely paying lip service to its importance and dismissive of the distinctive character of innovative industries in particular in the digital economy, by still using traditional tools to assess competitive concerns.

Furthermore, again in light of this approach, policy papers of international and national authorities and organizations are reviewed, and an extensive research of academic literature conducted to test and support the analyses, conclusions and proposals. They will be gateways to relevant and critical cases and academic works in some jurisdictions other than the EU, the UK and the US, as far as they relate to the tension between the dynamism of innovative markets and the inherent static and speculative nature of ex-ante merger control analysis, based on snapshots and projections.

The work has been designed to set out the above premise in the following **structure**:

The first introductory chapter will address the roots of and the historical connotations of the word “Innovation” and how it has been a difficult journey for it to gain the positive connotation it now has. This setting is crucial as one of the most important premises of this work is that innovation still has not actually been fully embraced and is almost treated with suspicion by competition authorities. This indicates that innovation’s negative historical trajectory still continues and falls short of full integration, contrary to what the authorities would have us think. In the following chapters the research will demonstrate that the competition authorities approach innovation one-sidedly, *i.e.*, as a theory of potential harm and not as a countervailing factor; demonstrating that the historical pejorative connotation that innovation carried still casts a shadow on their perceptions. This is not to say that enforcement agencies wholly eschew innovation, on the contrary, it is evident that they see it as their duty to protect and promote innovation. However, their perceptions do not yet appear to extend to fully appreciating it as a countervailing factor and remain limited to the sphere of protective concern. Once enforcement agencies make heavy inroads into adopting dynamic efficiency defences, then they will have fully shaken off the effects of this historical pejorative connotation.

The second chapter concentrates on the innovation effects of mergers themselves, *i.e.*, what are the concerns of the competition authorities in the selected jurisdictions and what defences are brought forward by the undertakings which are trying to convince the authorities that the proposed transactions will not harm the existing innovative drive of the parties. These will be addressed in existing arguments in real cases as well as potential arguments that could have been also put forward, showing that what the authorities dismiss as being speculative are, in fact, sound theories and defences that should be taken into consideration for a comprehensive analysis.

The research then brings the EU, US and UK competition authorities` practices into the spotlight in the next three chapters and discusses the particular cases which have presented complex innovation considerations. The purpose here is to analyse their approaches and to determine whether they were able to assess the innovation aspects of the particular transactions in a way that could balance the authority's concerns with countervailing arguments and thereby bestow the due importance on the defences brought by the undertakings.

The discussions in these chapters will all be wrapped up in the final conclusion chapter.

III. Reasoning

The number of merger control analyses putting an emphasis on the concept of innovation is growing all around the world with an increasing speed. We are now at that stage where even principles are being introduced by enforcers. In merger control analyses relating to dynamic and innovative markets, the European Commission has recently started using a "significant impediment to effective innovation competition" test,[3] which clearly indicates that there is growing need for research and scholarly work in the field of proper integration of innovation goals in merger control, as principles are being devised already. Having said this, the asymmetry is revealed in the practice: the Commission has been excluding all innovation arguments of the parties` defenses as speculative, despite readily embracing scaremongering or merely theoretical constructs of potential harm to

[3] Todino M., Van De Walle, G. & Stoican, L., "EU Merger Control and Harm to Innovation—A Long Walk to Freedom (from the Chains of Causation)." *The Antitrust Bulletin - Sage Journals* 64 1 (2019): 11-30

innovation. It seems, the elusive nature of the innovation concept makes it prone to being used unilaterally to feed anxieties about anticompetitive effects, but never as a countervailing factor for theories of potential harm to competition. Furthermore, although the Commission is eager to rely on stochastic models in terms of its theory of harm on innovation competition, when it comes to parties` reliance on general and hypothetical grounds (*e.g.,* that regulatory pressure on existing products would foster future innovation and competition), it is dismissive of such arguments on the grounds that the parties have provided no evidence in support of their statements.

Although cognizant of the need to use alternative tools and assessments, the Commission has been relying heavily on economic literature and theory in its assessment of a theory of harm in innovative markets. When the traditional worries about increasing market power take the lead, and innovation concerns are given a supportive role to provide depth to such existing anxieties, it is difficult to provide the independent and neutral focus that innovation goals deserve. This necessitates conducting counterfactual analyses; the authority would need to weigh up what new undertakings, innovations, technological creations they are preventing in prohibiting the transaction at hand, and consider whether the seller would have actually invested in that particular industry or product had it known that in the future the transaction would not be permitted: would they have expanded the business no matter what, or did they always have an exit strategy in mind?

It is also seen that the authorities have a somewhat cynical approach as they tend to resort to speculative assessment with respect to the undertakings` intentions behind the mergers. This is apparent in how they focus on the products in the pipeline in pharmaceutical industry and their theories of harm; arguing that the undertakings would scale back or even drop some of the research post-merger, resulting in loss of innovation. However, for those sectors that lack pipelines or similar visible/demonstrable routes regarding their innovative progress, the authorities should at least try to identify and conduct a similar innovation analysis without outright dismissal. The half-hearted approach results in missing those opportunities that may have contributed to economic development and total welfare. Furthermore, if competition authorities are indeed sincere about integrating innovation into competitive theory of harm, then they should consider whether the parties have been

able to sufficiently and credibly demonstrate their innovative progress and plans post-merger. Hence, the enforcers should accept that a way to protect innovation is also respecting it as a defence on the part of the undertakings. This is a necessary component if they want to sincerely claim that their innovation assessments have fully integrated and reached some level of maturity. As will be explained in the following section, although the concept of innovation was vilified or feared centuries ago, this asymmetry in treating the concept of innovation becomes even less acceptable now that we live in a period where innovation is ostensibly lauded, but remains still not fully integrated or embraced, due to unfounded anxieties or a lack of understanding that prevents any leaps of faith or the courage to take even the smallest step towards a more symmetrical approach.

When innovation concerns are raised purely on theoretical grounds in the absence of factual economic modeling, there would be many unanswered questions, the answers of which would be germane to properly defining and protecting innovation. Innovation has always been seen as a stochastic concept, which may also explain the myriad of definitions and connotations it has carried throughout history, as the following sections set out in painstaking detail. Nevertheless, now that enforcers are increasingly claiming that they can assess more concretely these innovation concerns during the merger control review, they should also be invited to show the same appetite to recognize innovation gains and defenses, as well.

In summary, the thesis explores the principles and tools of a functioning and feasible trade-off when reviewing innovation matters in the merger control context. While principles in this field are newly emerging, we contend that they are flawed and are characterized by different biases that will be explored in this research. They are designed to allow for speculative assessments when innovation considerations are presented as a concern, but they are not designed to allow for innovation considerations to be recognized as a redeeming virtue when they are presented as a defense. This research will focus on how and why this happens, and then will propose ways of developing a holistic innovation analysis in merger control, with the aim of truly serving the goal of fostering innovation, also aiming at limiting the risk that innovative efficiency concepts are appropriated to serve more traditionally understood concerns in merger control enforcement.

IV. The multiple meanings of "Innovation" : An Introduction to the Concept in an Historic Perspective

Innovation is one of the main drivers of the economy, as it contributes not only to facilitating people's daily activities, but also results in heightened economic growth and competitiveness, as witnessed in various industries. In this context, it should be noted that the term "innovation" does not merely refer to assorted technological developments, but also encompasses concepts such as the invention of a new product, the improvement of already existing products, cultural transformations, introduction of new ways of providing services, as well as the establishment of new industries. The products of innovation, in turn, further contribute to the well-being of people, mainly through the increases in benefits to consumers. The term, in fact, has been laden with so many connotations and roles since its conception, even now it is proving difficult to delineate and find a proper measurement to do it justice.

Innovation also leads to massive shifts in traditional industries through the introduction of "breakthroughs," which either alter existing industries significantly or demolish such long-established industries and create new ones. Recognising this type of innovation, more aptly described as drastic or disruptive innovation,[4] is significant as businesses need to distinguish whether a technology will disrupt their organization and carefully consider any actions they may need to take before the drastic innovation affects the market.[5] Is this not one of the reasons why the world was deemed to have experienced an industrial "revolution" in the first place? Starting in England in the 18th century and spreading all around the world, the global transformative influence of the first industrial revolution and the next ones pushed scholars to seek its causes and variables.[6] Some focused on the increase in the savings rate due to economic activities, technological inventions and innovations leading to mass production by machines, some in the rise of capitalism with competitive markets (rather than state-controlled ones) in ascent, as well as the growth of the market due to the increase in demand caused by a growing

[4] *See* Chapter 2 below for discussion on what constitutes a drastic or disruptive innovation, as opposed to an incremental or sustaining innovation.
[5] Nagy D., Schuessler J., Dubinsky, A. "Defining and identifying disruptive innovations" 57 *Industrial Marketing Management* 119, 120 (2016).
[6] Hartwell, R. M. "The Causes of the Industrial Revolution: An Essay in Methodology" *The Economic History Review* Vol 18 Issue 1 (1965): 164-182.

population.[7] Some, like Mokyr however, considered the actual dissemination of "useful knowledge" to the masses, particularly during the Enlightenment, as being vital and attributed Western economic development to the accumulation of useful knowledge in society and their increasing ability to put that useful knowledge into practice. [8]

The subsequent industrial revolutions also comprised of breakthroughs, in the use of electric power and electronics to increase efficiency and automation, breaking from traditional industries or amalgamating different business spheres. Some of the most illustrative examples to these shifts were provided by the well-known technology firms that have introduced breakthrough concepts into traditional industries in the past few decades, which led to the demolition of the existing industries and contributed to the establishment of new, highly innovative industries, such as the music-recording industry and its recent moves towards streaming services and live concerts, away from physical album and CD sales. The pace of the change has been gaining speed; now we are in the *Fourth Industrial Revolution* with the emergence of technologies such as artificial intelligence, the Internet of Things, blockchain, and virtual reality, among others. As Klaus Schwab, the executive chairman of the World Economic Forum puts it, the current revolution "is characterized by a fusion of technologies that is blurring the lines between physical, digital and biological spheres."[9] The borders between different industries increasingly seem to disappear; new ecosystems have appeared in the business world through the merging of various markets and value chains, in order to meet the consumers` constantly evolving needs and wants. In this new economic model of "ecosystems," consumers are offered an ecosystem that amalgamates different industries, which are integrated in such a way that the consumers are able to fulfil their needs without ever leaving it.[10] These "ecosystem orchestrators" garner unique characteristics which challenge the regulators, so the traditional approaches in defining the relevant market and

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[7] *Id*.
[8] Mokyr, J. "The Intellectual Origins of Modern Economic Growth" *The Journal of Economic History* 65(2) (2005): p. 287-295.
[9] Schwab K., *The Fourth Industrial Revolution: What It Means, How to Respond* (2016), *at* https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/
[10] Atluri, V., Dietz, M., Henke, N, *Competing in a world of sectors without borders* (2017), *at* https://www.mckinsey.com/business-functions/mckinsey-analytics/our-insights/competing-in-a-world-of-sectors-without-borders.

assessing market power through product substitutability, are no longer sufficient for dynamic markets and ecosystems.[11] New methods to infer market power emerge,[12] based on concepts such as multi-sided[13] and zero-price markets,[14] and taking into account impact of network effects, multi-homing, the role of user data, and switching costs.[15] As the characteristics of the market change, so should the tools of the regulators. Nevertheless, the fourth industrial revolution still fundamentally shares common traits with the first three, such as being founded on innovation, astonishing enhancements in efficiency, and increased production that results in higher levels of earnings.[16]

In light of these trends, the following sections aim to first provide a broad overview of the historical development of the concept of innovation. Chapter 2 will then focus more specifically on innovation effects in mergers and competition law.

a. The Influence of Renaissance and Reformation

The term "innovation," meaning "to introduce as new" (transitive), comes from the Latin term "innovatus," which is the past participle of "innovare," which can be defined as "to renew, restore."[17] "Innovare" is composed of the prefix "in," meaning *into*, and the word "novare," meaning *novelty,* and it was first used in 13th-century law texts, concerning the concept of "renewing."[18] Innovation, as a term, had become

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[11] Jacobides, M.G., Lianos I. "Regulating Platforms and Ecosystems: an Introduction" *Industrial and Corporate Change*, Vol 30, Issue 5 (2021): 1131–1142 *available at* https://doi.org/10.1093/icc/dtab060

[12] For detailed discussions on the next steps to be taken towards a competition policy in keeping with digital platforms and ecosystems, *See* Lianos, I., Carballa-Smichowski, B (2022) "A Coat of Many Colours – New Concepts and Metrics of Economic Power in Competition Law and Economics," *Journal of Competition Law & Economics,* 18, 795–831; *at* https://doi.org/10.1093/joclec/nhac002, and Crémer, J., De Montjoye, Y. & Schweitzer, H., (2019) Competition Policy For The Digital Era. Report Commissioned By The European Commission, *at* http://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf.

[13] For detailed discussions on multi-sided markets, *See e.g.* OECD, Rethinking Antitrust Tools for Multi-Sided Platforms (2018), *available at* https://www.oecd.org/competition/rethinking-antitrust-tools-for-multi-sided-platforms.htm.

[14] For detailed discussions on zero-price markets, *See* GSMA *Resetting competition policy frameworks for the digital ecosystem*, (2016), *available at* https://www.gsma.com/publicpolicy/wp-content/uploads/2016/10/GSMA_Resetting-Competition_Report_Oct-2016_60pp_WEBv2.pdf; Newman, J.M. "Regulating Attention Markets" (2020), available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3423487; OECD, OECD Handbook on Competition Policy in the Digital Age (2022), *available at* https://www.oecd.org/daf/competition-policy-in-the-digital-age/.

[15] OECD, *The Evolving Concept of Market Power in Digital Economy*, OECD Competition Policy Roundtable Background Note, ps. 8-18 (2022), *available at* https://www.oecd.org/daf/competition/the-evolving-concept-of-market-power-in-the-digital-economy-2022.pdf.

[16] Xu, M., David, J.M., Kim S. H., "The Fourth Industrial Revolution: Opportunities and Challenges" *International Journal of Financial Research* Vol 9, No 2 (2018): 90-95.

[17] *See* Online Etymology Dictionary, *at* https://www.etymonline.com/word/innovate.

[18] Godin, B., KAINOTOMIA: AN OLD WORD FOR A NEW WORLD, OR, THE DE-CONTESTATION OF A POLITICAL AND CONTESTED CONCEPT, PROJECT ON THE INTELLECTUAL HISTORY OF INNOVATION (Working Paper No. 9, 2011) *available at* http://www.csiic.ca/PDF/Old-New.pdf., *at* 12.

more and more prevalent in social, legal, and economic contexts, especially since the Renaissance (approximately from 1300 to 1600) and the Reformation (1517-1648) periods. Both the Renaissance and the Reformation themselves can be separately deemed as seminal epochs of innovation, especially in light of their impact in reshaping societies and the modern world. Since those eras, the frequency of the practice and demonstration of innovation has increased gradually over the years.

The term "Renaissance" means "rebirth," which implies an admiration and praise for ancient times/societies and suggests a desire for the revival of the heritage of ancient cultures.[19] The central idea underlying the Renaissance, was an opposition to the driving force of society, namely curiosity. In fact, the idea of "novelty" was being constantly protested during this time, animated by a wish to go back to the days of antiquity, as described by the art historian Erwin Panofsky: "*From the fourteenth and through the sixteenth century, then, and from one end of Europe to other, the men of Renaissance were convinced that the period in which they lived was a "new age" as sharply different from the medieval past as the medieval past had been from classical antiquity*."[20] The main objective of the Renaissance was to regenerate the classics. The effects of the Renaissance regarding the term "innovation" were reflected in numerous different fields, especially those requiring human ingenuity, such as the visual arts, literature, music, and architecture. The use of the term "innovation" in politics maintained its well-established meaning as "the introduction of change into the established order." Thus, innovation was viewed quite differently than today, not as an agent of progressive change but rather as a means to return to a pure, past state by means of renewal.

Nonetheless, in late Reformation, innovation would come to mean "unorthodoxy."[21] During Reformation, "*Kings and Churches forbade innovation; bishops supported these instructions with sermons, and followers (pamphleteers) developed arguments*

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[19] Vickers, B., *The Idea Of The Renaissance,* (2019), *available at* https://www.researchgate.net/publication/268396324_THE_IDEA_OF_THE_RENAISSANCE_REVISITED at 74-90.

[20] PANOFSKY, E., *RENAISSANCE AND RENASCENCES IN WESTERN ART.* HARPER ROW 36 (1969).

[21] Godin, B. (2018) `The Spirit of Innovation` *Annual meeting of the Canadian Economics Association, Session on Innovation organized by The Centre for the Study of Living Standards and the Institute for Research in Public Policy*, McGill University, June 1-3, 2018 *available at* http://www.csiic.ca/wp-content/uploads/2018/06/Spirit.pdf, at 3.

to this end - normative, legal and cultural."[22] Protestants had, in fact, wanted to restore Christianity to its original state, which they viewed as pure and faultless. They claimed they wanted reform, not innovation; "*They strove for a reformation in the sense of a restoration of the original form of the true congregation of Jesus Christ (...) renovation, nor innovation. The Church of the Roman papacy accused them of being too innovative in a fatal way*."[23] Reformation and innovation were distinguished by a difference in degree: the former implied a more fundamental and expansive change, the latter less so. The Catholic Church saw innovation as a problem because in the Middle Ages and in the age of the Reformation, novelty was considered the essence of heresy.[24] To be more precise, novelty was only seen as dangerous in the context of innovation, when this was intentional, systematic and teleological: "*... novelty (something new) itself is not the issue. (....) Innovation is action: "introducing" something new into the world, new ideas (doctrine) or activities (worship) into practice*."[25] Moreover, "*The innovator has a purpose, a scheme or design to "overthrow" the social order. He is never alone. He creates a whole "sect" that follows him*."[26] Therefore innovation was seen as a deliberate action leading to different practices and ideologies that could endanger the status-quo. It was perceived as a sudden and violent force that would destroy the social order, thus something to be feared:[27] an "unorthodox"[28] and dangerous deviation.

Especially after the Reformation, "innovation" maintained its position as a useful concept mostly in the fields of politics and religion, which reached its climax in the 17th century.[29] With the influence and impact of the Renaissance, the debates and controversies over the corruption of the Church and its abuses led to a new structure in official Christendom.[30] The intensity of the religious controversies with regard to the renewal of the structure of Christianity was reflected in the established connotations of the term "innovation." According to Godin, the period between the

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[22] *Id*.
[23] Hamm, B. *How Innovative was the Reformation?* In: Ed. by C. Jäggi, and J. Staecker, ed.s Archäologie der Reformation Studien zu den Auswirkungen des Konfessionswechsels auf die materielle Kultur, pp 26-44, 2007.
[24] *Id*.
[25] Godin (2018) *supra* note 21, at 3.
[26] *Id*.
[27] *Id*.
[28] Godin (2018) *supra* note 21, at 5.
[29] Godin (2011) *supra* note 18, at 8-9.
[30] SCHAFF, P., HISTORY OF THE CHRISTIAN CHURCH, VII. MODERN CHRISTIANITY, THE GERMAN REFORMATION, GRAND RAPIDS, MI: CHRISTIAN CLASSICS ETHEREAL LIBRARY 3-6, 12 (1882).

Reformation and the 19th century was thus described as a time when innovation was most unwelcome.[31]

As a reflection of the spirit of the Renaissance, "innovation" already had a negative implication but the term adopted a more derogatory meaning in the following years due to the influence of the Reformation: the connotation gained religious undertone, as in the sense of "heretic."[32] As innovation garnered such a heated meaning in those decades, "innovating" became the subject and focus of accusations. The public authorities of that period, such as royal houses and churches, began to prohibit innovations of any kind whatsoever. According to Godin,[33] two of the earliest instances of such actions taken by the authorities from the earlier years of Reformation were: (i) when Edward VI, King of England from 1547 to 1553, issued the "*Proclamation Against Those That Doeth Innouate*" in 1548, concerning a caveat on not to innovate and the punishments to be imposed in case of its breach, and (ii) the publication of the *Book of Common Prayer*, a liturgical book first authorized for use in the Church of England in 1549,[34] counselling its readers not to get involved in innovations.

Another prominent argument against innovation had been the idea of protecting the natural order. Indeed, "*[I]nnovation (…) was frequently meant to imply that the changes were unwanted, unnatural (apart from the natural order of things), revolutionary, and/or dangerous, as in "introducing change into the established order*."[35] Philosophers as well as rulers considered natural order and innovation to be in conflict; innovation was considered to be potentially violent and dangerous.[36] Such a deviation from the natural order, which is divinely ordained and therefore peaceful, could turn people away from God. Innovation could even be considered "revolutionary:"[37] "*The association between revolution and innovation has made of*

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[31] Godin, B., THE VOCABULARY OF INNOVATION: A LEXICON. PROJECT ON THE INTELLECTUAL HISTORY OF INNOVATION (Working Paper No. 20, 2014) *available at* http://www.csiic.ca/PDF/LexiconPaperNo20.pdf.
[32] Godin, B., INNOVATION AND CONCEPTUAL INNOVATION IN ANCIENT GREECE. PROJECT ON THE INTELLECTUAL HISTORY OF INNOVATION (Working Paper No. 12, 2012) *available at* http://www.csiic.ca/PDF/Antiquity.pdf.
[33] *Id* at 8-13.
[34] Encyclopaedia Britannica - Topic: *Book of Common Prayer*, *at* https://www.britannica.com/topic/Book-of-Common-Prayer.
[35] Schramm, L., *Innovation Technology: A Dictionary*, Walter De Gruyter Gmbh, Berlin / Boston, 2017, at 1.
[36] *Id.*
[37] Godin, B., INNOVATION: A CONCEPTUAL HISTORY OF AN ANONYMOUS CONCEPT, PROJECT ON THE INTELLECTUAL HISTORY OF INNOVATION (Working Paper, No. 21, 2015) *available at* http://www.csiic.ca/PDF/WorkingPaper21.pdf

innovation a sudden and violent affair. Revolution is an overall or total change, often with a violent overtone."[38] This was perceived as a grave threat as revolutions were much likelier to be violent. Since natural order was considered so important, Protestant reformers appealed to this idea by highlighting their moderation. In contrast with innovation, the terms "reformation" or "restoration" were frequently used to describe positive, moderate, natural-order-restoring changes by the Protestant reformers.[39]

In light of all these views, the term took on such a pejorative meaning during this era that people started accusing each other of "being an innovator," or of "innovating," and such accusations became powerful and compelling arguments that could be used against one's enemies during this era, "*a polemical weapon used against those who attempt to change things.*"[40] As a counterargument, people who were accused of being innovators defended themselves by contending that they were not inventing but merely imitating. They used the prevailing indulgence for earlier and primitive ages in their societies and turned them to their advantage.[41]

As a linguistic term, innovation has become especially ubiquitous and widely used since the Renaissance and the Reformation. The propagation of the concept of innovation started slowly at first, and then extended towards its climax, in parallel with the increasing influence of such eras. As a result of the royal and church authorities' dominance over their societies in this period, innovation was still considered to have ill repute and continued to be used with derogatory meaning. However, the controversies over the concept and practice of "innovation," made the term more popular than it had ever been.

b. Constructing the Modern Concept of Innovation

Following the Renaissance and the Reformation, the connotation of the term "innovation" gradually evolved over the coming decades of the second half of the 18th century, which encompassed the eras of the Enlightenment (1715 - 1789) and

[38] Godin, (2014) *supra* note 31, at 16.
[39] Schramm (2017) *supra note* 35.
[40] Godin (2014) *supra note* 38, at 8.
[41] Godin, B., KAINOTOMIA: AN OLD WORD FOR A NEW WORLD, OR, THE DE-CONTESTATION OF A POLITICAL AND CONTESTED CONCEPT, PROJECT ON THE INTELLECTUAL HISTORY OF INNOVATION (Working Paper No. 9, 2011) *available at* http://www.csiic.ca/PDF/Old-New.pdf , at 8-9 & 23.

the French Revolution (1789 - 1799). After the strict and censorious views of the Renaissance and the Reformation periods, innovation regained its positive meaning following the French Revolution.[42] The concept gained a constructive perspective, especially since the 19th century, and, following the increasingly favourable social attitudes towards the concept of "novelty" it has reached the zenith in popularity in the modern era. At the time, the term "innovation" encompassed politics and religion, as well as economics and any other field which can show progress, whereas in the more recent years it has been mainly used in the context of technology and technological advancements.

The paradigm shift brought about by the French Revolution was also reflected on the term "innovation," which regained the political sense that it had had in Ancient Greece, but positively and constructively. "*…[B]y the nineteenth century, a third kind of argument enters the discourses on innovation: logos. (....) Innovation is rational, in many ways. It brings benefits, if introduced correctly. (....) This rehabilitation occurred between c. 1750 and c. 1850, that period Koselleck designates as Satellzeit, when many words changed meanings due to a "shift in the conception of time and reorientation towards the future*."[43] The connotative transformation of innovation was not an isolated incident but rather part of the paradigm shift, precipitated by changes in philosophy, politics, science and technology at the time.

The ancient civilizations had not yet adopted the notion that efficiency and productivity are intrinsically beneficial, which is more typical of recent times.[44] The abundant supply of manpower, provided by the slaves in the empires, reduced the need for technical process for the most part. Those who had ideas that could lead to technical development lacked the resources, and those who had resources lacked the interest and desire for novelty and efficiency.[45] All these led to a dearth of technical progress, or if nothing else, reduced its momentum. However, as the world's population dramatically increased in the following centuries, technical

[42] *Id*.
[43] GODIN, B., INNOVATION CONTESTED: THE IDEA OF INNOVATION OVER THE CENTURIES. ROUTLEDGE STUDIES IN SOCIAL AND POLITICAL THOUGHT. ROUTLEDGE (2014).
[44] Finley, M. I., "Technical Innovation and Economic Progress in the Ancient World" *The Economic History Review* Vol 18 (1965): 29–45, at 31.
[45] *Id*.

progress became a means to increase efficiency, and satisfy the needs of the growing population with scarce resources available. Along with this, especially during the Industrial Revolution and the Enlightenment the society embraced the positive value of innovation and its contribution to economy.

In parallel, the change in how innovation was viewed was primarily aided by appeal to rationality and progress. Seeing certain kinds of change as "progress" rather than prioritizing tradition and classical works was an important step. Theorists began to provide direct counter-arguments to those who opposed innovation, which would, in time, become even more overt: "*To the opponents of innovation, the age of innovation is subversive to social order, being too radical. The modern writer praises this same spirit, precisely because it changes things in a revolutionary way*."[46]

Thus, the term "innovation" was aligned with the term "revolution" in this era. However, the main difference is that, where innovation is a term that denotes "private liberty" (as pointed out by Godin),[47] revolutions are experienced collectively. Another favourable impact of the French Revolution on innovation was that the term itself became more and more commonly used in the everyday vernacular, starting in France.[48] The novelties and innovative changes caught the public's attention more quickly than before, as, at the time, purposeful and essential changes were being made in various areas, such as politics, economics, science, industry, technology, and social order.

At this time research gained particular focus and importance. Back in the 11th century, the first universities in Paris, Oxford and Bologna had been hierarchically tied to the church; lacking autonomy and academic freedom.[49] The unsecular and dogmatic nature of the curriculum was not ideally suitable for research and innovative activities. In the 19th century many modern universities were established all over Europe, with German universities becoming renowned for their excellence in organizational structure. These modern universities had two main activities: teaching

[46] GODIN, B., INNOVATION CONTESTED: THE IDEA OF INNOVATION OVER THE CENTURIES. ROUTLEDGE STUDIES IN SOCIAL AND POLITICAL THOUGHT. ROUTLEDGE (2014).
[47] *Supra* note37, at 18, referring to the Scottish philosopher, Thomas Reid.
[48] Godin, (2014) *supra* note 31
[49] Georgedes, K., "Religion, Education and the Role of Government in Medieval Universities: Lessons Learned or Lost?" *Forum on Public Policy: A Journal of the Oxford Round Table*, Vol 2:1 (2006), 21-24

and researching. While the professors could initially take part in both, as the research methods became more complex and work load increased over time, the assistants alone conducted research in the additional units of the universities called *Institutes.*[50] The establishment of modern universities led to the emergence of a new profession: education and research activities performed by specifically trained individuals in their fields, known as academicians today.[51] By then, the value of research and technological progress was clear; so much so that governments, such as the United States, directly funded universities that specialized in research. In the last decades of the 19th century, industrial research laboratories were commonly found within public and private investments, where companies conducted research and development activities for their products.[52] The systematic research methods, as well as the advent of a field solely focused on researching, paved the way for scientific development and carried innovation one step forward.

Innovation became the positive, ubiquitous concept it is today with technological and economic developments: "*It then became an inclusive term that covers both religion and politics, then the social, giving to a secular term for heresy. In the nineteenth century, innovation was reconceptualized to serve modern society. […] Religion is not the whole story of course. Technology is a major source of concepts that define the semantic field of innovation and the discourses in the twentieth century, through economics and market ideology (Godin, forthcoming).*"[53]

The First Industrial Revolution, which took place in Europe and especially in Great Britain between the 17th and 18th centuries, is rightly considered to be the economic and technological milestone of its era. Therefore, the concept of innovation within this specific timeframe featured and emphasized the aspects of technology, institution, and product development.[54] The increasing use of technology and its

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[50] Ben-David, J., Zloczower, A., "Universities and Academic Systems in Modern Societies*"* 3,1 *European Journal of Sociology*, (1962) 2–10.
[51] Etzkowitz, H. & Leydesdorff, L., *Universities and the global knowledge economy: A triple helix of university-industry-government relations Bloomsbury (2002) available at* https://www.researchgate.net/publication/239066835_Universities_and_the_global_knowledge_economy_A_triple_helix_of_university-industry-government_relations
[52] Mowery, D. "Technological Change and the Evolution of the U.S. National Innovation System 1880-1990." In Innovation. Perspectives for the 21st Century. Madrid: BBVA, 2011.
[53] Godin (2018) *supra* note 21, at 5.
[54] Bruland K. & Mowery, D., *Innovation Through Time*, 2-11 (2004), *at* http://hdl.handle.net/1853/43162

impact on the general public came to be a topic of heated intellectual discussion,[55] and consequently, it could be seen that the economic dimensions of the concept of innovation could not (and would not) be ignored from that time on.

c. Innovation and History of Intellectual Property Rights

In terms of philosophy of knowledge, from ancient times and in many civilizations, the question was whether philosophers should be compensated for teaching their knowledge and wisdom.[56] At the time, knowledge and ideas of the philosophers, or poems of the poets were considered as divine wisdom and not creations of a person`s mind. Confucius did not receive payments as he considered his teaching was not a creation but a way of conveying the wisdom of the ancients.[57] The Biblical verse "*Freely ye have received, freely give*" defining knowledge to be God-given and thus freely transmitted, dominated the early Judeo-Christian doctrine[58] and continued in the mediaeval age. In the 15th century this conviction came to an end, as the invention of printing press changed the way information circulated, made reading accessible for larger groups with limited education, and famously contributed to the spread of the thoughts behind Reformation.[59] Due to the rise in demand for reading material, writing became extremely popular and the writers wanted their profit.

First in Venice, a primitive form of intellectual property emerged as privileges granted on demand.[60] In England, the birthplace of the Industrial Revolution, Queen Elizabeth I used her right to grant royal monopolies for political manoeuvres and as a source of income at the end of the 1500s. However, her arbitrary decisions and the wide nature of monopolies granted dissatisfied the public[61] which led Elizabeth's successor, James, to pass the Statute of Monopolies in 1623, prohibiting all monopolies with a few exceptions for limited rights*: "...for the term of 14 years or under hereafter to be made of the sole working or making of any manner of new*

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[55] Godin, B., *Innovation: History of a Category*. Project on the Intellectual History of Innovation (Working Paper No. 1, 2008) *Available at*: http://www.csiic.ca/PDF/IntellectualNo1.pdf at 18-21.
[56] Blank, D. L, "Socratics versus Sophists on Payment for Teaching" *Classical Antiquity*, 4 (1) (1985): 1-49
[57] *Ibid*.
[58] Hesse, C. "The Rise of Intellectual Property, 700 B.C.-A.D. 2000: An Idea in the Balance", *Daedalus* Vol. 131, No. 2, On Intellectual Property (Spring, 2002), 26-45 and Vaver, D. *Intellectual Property Rights: Critical Concepts in Law* 1st Edition, 53, (2006)
[59] Holborn, L. W, "Printing and the Growth of a Protestant Movement in Germany from 1517 to 1524" *Church History*, vol. 11, no. 2 (1942) 123–137.
[60] May C.,"Venise: aux origines de la propriété intellectuelle*" L'Économie politique*, vol. n° 14, no. 2 (2002) 6-21.
[61] Deazley, R. "Commentary on the Statute of Monopolies 1624 in Primary Sources on Copyright (1450-1900)", eds L. Bently & M. Kretschmer, (2008), www.copyrighthistory.org

manufactures within this Realm to the true and first inventor..."[62] Subsequently, the rapidly expanding publishing industry and the high demand for written content also required a regulation. Accordingly in 1710, the Statute of Anne (also known as the Copyright Act) was passed, which entitled existing written works a fourteen year of protection period (renewable once), and twenty-one years for the works to be written henceforth. Although its purpose is a subject of debate among the scholars, the Statute of Anne was certainly progressive as it recognized the author as the main subject and owner of the intellectual property rights.[63]

It is therefore no surprise that the patent rights flourished particularly in the 17th and 18th century, the time of the industrial revolution. The French Revolution brought the notion of a property right in knowledge, whereas the United States based intellectual property rights directly on individual rights.[64] Economic historians believe that the incentives provided by patents along with the industrial revolution together, led to an era that was more productive and faster to develop than ever before.[65] At the time, despite the initial costs, it was profitable for one to make an invention, as the eventual returns during the industrial revolution was superior, and the patents provided sufficient security for the initial costs to be recovered.[66] Furthermore an incentive patent system also ensured that innovations were continuous, with benefits being invested back into innovative processes.

Since the First Industrial Revolution, the process of creating and registering "patents" has become crucial to economic growth, together with the developments in technology, science, and industry.[67] There was a reciprocal link between the advent of "patenting" and industrialization, each having substantial positive effects on the other.[68] Increasing technological and industrial developments offered consumers a more extensive range of goods, whereas improvements in the quality and durability

[62] Statute of Monopolies 1623, section VI.
[63] Bracha, O "The Adventures of the Statute of Anne in the Land of Unlimited Possibilities: The Life of a Legal Transplant" *Berkeley Technology Law Journal* 25(3) (2010): 1427-1473.
[64] May, C. & Sell, S.K. *Intellectual Property Rights: A Critical History,* Lynne Rienner Publishers Inc. (2006) p.101.
[65] Bottomley, S. Patents and the first industrial revolution in the United States, France and Britain, 1700-1850*,* IAST Working Papers 14-14, Institute for Advanced Study in Toulouse (IAST) 7-8(2014)
[66] *Ibid.*
[67] Bruland K. & Mowery, D., (2004) *supra* note 54 at 2-6.
[68] MacLeod C. & Nuvolari, A., PATENTS AND INDUSTRIALIZATION: AN HISTORICAL OVERVIEW OF THE BRITISH CASE (Laboratory of Economics and Management (LEM), Working Paper Series NO. 1624-1907, 2-3 2010).

of the goods also raised the productivity of a given society.[69] Before these developments, inventors had not preferred to patent their inventions due to the high costs of patenting and the limited access to patent attorneys. With the increased pace of technological developments and economic gains, patenting started to seem quite beneficial, and the patent system became one of the most popular economic tools of its time.[70]

d. Historical Progress of Development Economics and R&D

With the economic and technological progress made in the Second Industrial Revolution of 1870-1914, which took place primarily in Europe and the United States, entirely new industrial sectors emerged in the economic landscape. Accordingly, the need for innovations, inventions and improvements expanded significantly, especially in the field of technology.[71] At the time however, the classical and later the neoclassical economic approaches were prevalent, which were characterised by a static model. Their views focused on economic growth and determined that development was a result of multiplication of markets, free trade, and specialisation – division of labour; but failed to address the dynamic element.[72] According to Schumpeter, the economic models and concepts that had been developed by John Maynard Keynes and David Ricardo were highly abstract and incapable of providing an opportunity to conduct a precise and accurate evaluation, as they would "freeze" most of the interdependent variables when analyzing factors in their models.[73] Such an approach that aimed to bring a formula-based relationship to economic variables at the cost of disregarding interdependencies, and totally ignoring various factors such as innovation or possibility of "multiple equilibria"[74] was deemed unsuitable; thus necessitating more comprehensive approaches.[75]

Meanwhile, from the mid-20th century onwards, mainly due to the impact of the two World Wars and the economic depression periods witnessed in their aftermaths, a transformation was observed in the structure of innovations. This change in the

[69] *Id*. at 11-13.
[70] Bruland K. & Mowery, D., (2004) *supra* note 54, at 4-5.
[71] *Id*. at 12-13.
[72] Lianos I, Mateus A, & Raslan A Development Economics and Competition, A Parallel Intellectual History, UCL Research Papers (2012) at 5-8 *available at* https://discovery.ucl.ac.uk/id/eprint/10045074/
[73] *See* Schumpeter, J. A. *History of Economic Analysis*, Routledge (2nd ed, 1954)
[74] Lianos I., Mateus A., & Raslan A. (2012) *Supra* note 72.
[75] *See* Belleflamme, P, & Peitz, M. *Industrial Organization*, Cambridge University Press (2nd ed, 2015).

concept of innovation was realized through the system known as “research and development,” or commonly abbreviated as “R&D.” R&D became a vital part of the process of production in various new and existing industries.

Faced with economic and military challenges, the governments were aware that an innovation strategy was essential: in the US, the first attempt to create an innovation strategy in the 1930s as a response to the Great Depression[76] failed and faced public antagonism as the public had strongly believed that it was the creation of new technologies that hindered their opportunities for employment.[77] Nevertheless, the Second World War and the imminent need for new technologies, changed their perspective and subsequently, the outcome of the war, as is considered that the US victory was a result of new technologies like radars and nuclear energy.[78] This led the US President, Franklin Roosevelt, to ask his scientific advisor, Vannevar Bush, to come up with a new innovation-based strategy for the post-WW2 period.[79]

According to Bush in his report *Science – The Endless Frontier*, basic research (what he calls “science”) that creates fundamental knowledge, supports the establishment of applied research, contributing to development and innovation.[80] It is widely accepted that Bush’s strategy serves as the foundation of the “*linear model*” theory of the modern economy.[81] Bush knew that creation of fundamental knowledge had to be constant, otherwise it would lose traction. Therefore, he recommended government intervention through the funding of universities and non-profit organizations, in order to assure an efficient and perpetual creation process of innovation.[82] By this recommendation, Bush clearly desired to connect the relevant entities of private sector and the government, intending to increase competition in the private sector and enhance economic growth.[83] The expansion of R&D also necessitated protection of the results: the Bayh-Dole Act of 1980 in the US allowed

[76] Etzkowitz, H. “An Innovation Strategy to End the Second Great Depression” *European Planning Studies* 20(9), (2012), at 1439, 1440.
[77] *Id*.
[78] *Id*., at 1445.
[79] Lianos I., & Dreyfuss R. New Challenges in the Intersection of Intellectual Property Rights with Competition Law, A View from Europe and the United States, 4/2013, CLES Research Paper, at 6.
[80] Leyden D. P., & Menter, M. “The legacy and promise of Vannevar Bush: rethinking the model of innovation and the role of public policy” *Economics of Innovation and New Technology* 27/3 (2018) at 225, 228.
[81] *Id*.
[82] *Id*.
[83] Lianos I., & Dreyfuss R. *supra* note 79, at 7.

universities to own patent rights for their government-funded innovations, and incentivized R&D.[84] Having said this, the exclusive nature of these intellectual property rights might have also resulted in creating abusive monopolies or anti-competitive rights for the IP right owners, which made competition law crucial in order to maintain effective competition in markets.[85]

The markets most affected by the introduction of the R&D system to the production processes of such industries have been the pharmaceutical and biotechnology, electronics, information, and communications technology ("ICT") markets.[86] Richard Gordon describes the period of 1870-1970 as the "special century," as it heralded these great inventions that transformed the living standards and enabled a faster economic (labour productivity) growth compared to any decade that came before. Inventions of the second industrial revolution, electricity, internal combustion engine, running water were instrumental for the life boom in this period, much more so than those of the third revolution, in entertainment, communication and IT.[87] This is also in parallel with Godin's description of the progress of innovation in the period from the mid-19th to the early 20th century: "….the use of the concept exploded and permeated the scientific literature, above all in medicine, chemistry, engineering, and instrumentation. One thing is certain: as titles of the time attest, to the scientists, "innovation" was novelty in *methods* – not technology."[88]

When seen in this light, the term "innovation" is indeed more encompassing than just technological developments, no matter what the general public perception may be today. Distinguished scholars have highlighted a wide range of sub-categories, such as the invention of new methods and cultural developments. Economist Joseph A. Schumpeter simplified the definition of innovation as "setting up of a new production function," as concerning both the improvement of the current outputs and the development of new products.[89] Following which, the anthropologist H. G. Barnett

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[84] *Id* at 8.
[85] Anderman, S. *The Interface Between Intellectual Property Rights and Competition Policy* Cambridge University Press (2007) at 1-5.
[86] *Id*. at 22-31.
[87] Gordon, R. *The Rise and Fall of American Growth*, Princeton University Press (2016) at 438.
[88] Godin (2008) *supra* note 55 at 16.
[89] Mee S., "*Joseph Schumpeter and the Business Cycle: An Historical Synthesis*" Joseph A. Schumpeter, How the Economic System Generates Evolution, Business Cycles I III, (2009), *at* https://www.tcd.ie/Economics/assets/pdf/SER/2009/simon_mee.pdf at 87.

approached innovation as a cultural development issue, and defined it as "any thought, behavior, or thing that is new because it is qualitatively different from existing forms."[90] A broader definition of innovation was offered by sociologist Everett M. Rogers, as "an idea, practice, or object that is perceived as new by an individual or another unit of adoption."[91]

Focusing our attention on the modern era, we note that the financial world of the 21st century has been built on the idea of innovation. Despite the scholars, the public perception of the concept of innovation, together with the influence of R&D in various industries, is now linked with technology. Godin criticized the general myopia of this position by declaring that, "Today, the concept of innovation is wedded to an economic ideology, so much that we forget it has mainly been a political – and contested – concept for the last five hundred years."[92]As technology continues to develop, and companies seek to achieve further innovations, the term "innovation" has ultimately turned into a buzzword, and the era we live in has come to be called the "technology era." Furthermore, the global economy relies on innovation, thus being an "innovator" is now a title to be proud of. This is a total reversal of the perception as it was during the Renaissance and the Reformation.

Innovation, in addition to contributing to economic growth, is also being seen as providing economic value even by its potential existence. This is linked to the concept of futurity which measures business value in terms of their anticipated future profits.[93] The clearest appearance of this approach is in valuations for blockchain technology projects or digital platforms: due to the market`s expectation of very significant future profits, their current cash flow is not deemed to be indicative for what the market expects their actual value to be; it is the innovative potential that is being put in the centre of the economic game. Furthermore, especially for digital platforms, the reason the giants are valued so high is again based on a forecast of "their monopolistic potential as they control important bottlenecks in the attention and

[90] Cook N. B., *Review of H.G. Barnett's book, Innovation: The Basis of Cultural Change,* (2014), *available at* http://rxiv.org/pdf/1405.0301v1.pdf
[91] Rogers, E. M., *Diffusion Of Innovations*, (3d ed. 1983), *at* https://teddykw2.files.wordpress.com/2012/07/everett-m-rogers-diffusion-of-innovations.pdf
[92] Godin (2015) *supra* note 37.
[93] Commons, J.R. *Institutional Economics: Its Place in Political Economy,* The University of Wisconsin Press (1934) as mentioned in Lianos, I., Competition Law for the Digital Era: A Complex Systems' Perspective UCL Faculty of Laws Centre for Law, Economics and Society, Research Paper Series 6/2019, at 10.

prediction economy."[94] Thus, futurity (and thus innovative potential, including analyses based on future market value) also grabs the attention of competition authorities.

There is a growing awareness for the centrality of innovation and considerable effort by competition authorities to build stronger foundations and human resources that will diagnose and track the market phenomena related to innovation.[95] The concern here is how they employ this awareness within their enforcement practices.

V. Conclusion

Despite the controversies surrounding the concept of innovation in the old days, the term has eventually and perhaps inevitably taken on a more positive connotation. Considering the fact that economic growth stems primarily from innovation, there is not much room left for such scepticism or controversy in the modern global economy; economic theorists have been consistently demonstrating the role and driving force of innovation behind economic growth. The introduction of the concept to competition law itself has been admittedly delayed and relatively recent however, as argued, it is still yet to be fully embraced. To break the historical trajectory of the term, it is imperative that the role of innovation in economic development is recognized and thus fully integrated and immersed in assessments by the competition authorities.

[94] Lianos (2019) *supra* note 93, at 54.
[95] The Legal 500, "The Legal 500 Webinars: A contemporary analysis of the prime objective(s) of competition law" (Youtube, 29 September 2022) <https://www.youtube.com/watch?v=S3RuEJFOUkk> accessed 26 February 2023

Chapter 2

Innovation Effects of Mergers: The Concepts and Theoretical Background

I. Introduction

Having introduced the historical journey of the term "*innovation*," and how it may relate to the concept of "*competition*," we now shift our focus to the theoretical and empirical academic research in competition law and economics regarding the effects of mergers on the innovation incentives of undertakings. This chapter will first outline various competition law concepts that underlie the authorities` assessments in merger control, and touch upon certain novel concepts that have arisen to address innovation concerns. Following from this, we will then elaborate the ideas and findings which constitute the theoretical basis for the concerns that competition authorities have with regard to innovation in merger control enforcement and then proceed to an analysis of the literature that supports the arguments of merging parties concerning such transactions. The ultimate aim is to lay the grounds to demonstrate that the practices of the competition authorities have remained rather too cautious and restrictive in mergers, despite their intentions to protect innovation as stated or implied in their own guidelines. Perhaps it is a more fundamental question: Should that protection be geared towards only what has already been achieved in terms of innovative success, or also support and foster the means to potential new innovations? Would consumer welfare benefit from disregarding future innovations that may be pro-competitive, just because it is not verifiable under strict standards of proof at this time?

II. Certain Competition Law Concepts in Merger Control

In the US, Europe and in many other jurisdictions which follow their decisional practices, the merger control system is based on the evaluation of two effects: (i) ***unilateral effects***, and (ii) ***coordination effects***. *Unilateral effects* occur when a merger eliminates competition between the transaction parties, enhances market power or reduces competition significantly *even if it does not change the behavior of other firms*. If a merger enhances market power also by increasing the risk of

coordinated, accommodating, or interdependent behavior among rivals, the adverse competitive effects arising in this manner are called *coordinated effects*.[96]

Unilateral effects can emerge with regard to changes in the various competition parameters in the post-merger market, such as (i) increase in price, (ii) reduction in output or capacity, and (iii) diminished innovation or reduced product variety. In the Horizontal Merger Guidelines issued by the US Department of Justice and the Federal Trade Commission in 2010 (hereafter, "*Horizontal Merger Guidelines*"), it is recognized and acknowledged that a merger might result in different unilateral effects along various dimensions of competition. For example, a merger may increase prices in the short term but not raise longer-term concerns about innovation, either because rivals in the relevant market will provide sufficient innovation competition or because the merger will generate "*cognizable*" research and development efficiencies.[97]

The relationship between competition and innovation is theoretically and empirically ambiguous. Nonetheless, the Horizontal Merger Guidelines take the position that "Competition often spurs firms to innovate," and states that competition enforcement agencies will consider whether a merger is likely to diminish "**innovation competition**" by encouraging the merged undertaking to curtail its innovative efforts below the level that would prevail in the absence of the merger.[98] Section 6.4 provides that curtailment of innovation can take the form of 'reduced incentive to continue with an existing product-development effort or reduced incentive to initiate the development of new products.'

According to the Horizontal Merger Guidelines, the reduction in the incentive to continue with an existing product-development effort is most likely to occur when at least one of the merging firms is engaged in efforts to introduce new products to consumers that would capture substantial revenues from the other merging firm. The reduction in the incentive to initiate the development of new products is most likely to arise if at least one of the merging firms possesses capabilities that are likely to lead

[96] US Department of Justice and Federal Trade Commission, Horizontal Merger Guidelines (2010), *available at* https://www.ftc.gov/sites/default/files/attachments/merger-review/100819hmg.pdf
[97] Horizontal Merger Guidelines, at 20.
[98] *Id*. at 23.

it to develop new products in the future that would capture substantial revenues from the other merging firm. Along with these principles, the Horizontal Merger Guidelines state that competition enforcement authorities will consider whether a merger will diminish 'innovation competition' by combining two small number of firms with the most substantial capabilities to successfully innovate in a specific direction.[99]

As in the assessment of unilateral price effects, the Horizontal Merger Guidelines suggest that the competition authorities should evaluate the extent to which successful innovation by one merging firm is likely to take away sales from the other, and investigate the extent to which post-merger incentives for future innovation will be diminished compared to those that would have prevailed in the absence of the merger.[100] Competition enforcement authorities should also consider whether the merger is likely to enable innovation by bringing together complementary capabilities of the merging undertakings.[101] Although in the actual assessment, the weight accorded to the innovation enabled, may be much less than that accorded to the potential reduction of innovation in the market.

The merger control enforcement regime in Europe generally follows similar principles as the enforcement system in the United States. The European Commission ("**Commission**") has put forth its principles on the horizontal merger control in its "*Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings*," which was issued in 2004 (hereafter, "*EU Horizontal Merger Guidelines*"). The Commission assesses whether or not a proposed concentration would significantly impede effective competition, as a result of the creation of a dominant position, in a particular market.

The Commission examines and assesses the anti-competitive effects of a merger by using the **"*SIEC Test*"** and seeks to answer the fundamental question of whether the merger would "*significantly impede effective competition*." In general, competition is considered to be harmed (i) if the merged party obtains market power, (ii) if the merger would eliminate a competitive constraint on the merging parties (*e.g.,* a close

[99] *Id*.
[100] *Id*.
[101] *Id*. at 23-24.

competitor or a potential competitor), or (iii) if the merger would significantly increase the likelihood of coordination among the competitors.[102] [103]

The Commission accepts and acknowledges that innovation is one of the benefits that effective competition brings to consumers.[104] In the EU Horizontal Merger Guidelines, it is stated that, in markets where innovation is an essential competitive force, a merger may increase the firm's "*ability and incentive to bring new innovations*" to the relevant market and, thereby, boost the competitive pressure on rivals to innovate in that market. On the other hand, the effective competition may be significantly impeded by a merger between two talented innovators, for instance, between two companies with *pipeline products* related to a specific product-market. The EU Horizontal Merger Guidelines also consider the possibility that a firm with a relatively small market share may, nevertheless, be a principal competitive force if it has promising pipeline products.[105]

The Commission is likely to challenge a merger if one of the merging parties is a recent entrant with a small market share or a potential entrant, even if the level of concentration in the relevant market and the expected increase in the concentration level in the market after the merger is small. In such a case, the Commission will

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[102] European Commission, The Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings, C 031 Official Journal of the European Union, (2011) recital 22, *available at* https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52004XC0205(02)&from=EN.

[103] In horizontal mergers, when assessing whether the unilateral merger effects are significant, the European Commission analyzes whether the merging firms have large market shares, whether they are close competitors, whether the customers have limited possibilities of switching suppliers (*i.e.,* the existence of few alternative suppliers or high switching costs), whether the competitors are unlikely to increase supply if prices increase (*e.g.,* capacity constraints, costly capacity expansion), whether the merged entity would be able to hinder expansion by competitors (*e.g.,* through control over patents or other intellectual properties), and whether the merger would eliminate an essential competitive force (*e.g.,* by removing a particularly innovative competitor) (EU Horizontal Merger Guidelines, recitals 27-38). A merger with a potential competitor can have the same significant anticompetitive effect as a merger between two competitors, if there is a *significant likelihood* that the potential competitor would become an effective competitor, and if there were none or not enough other potential competitors remaining in the market to exert sufficient competitive pressure. (EU Horizontal Merger Guidelines, recitals 58-60). A merger is unlikely to cause a significant impediment to an active competition if entering into a market is sufficiently easy. In this regard, a new entrant must be able to exert a sufficient competitive constraint, and an entry must be likely, timely, and of sufficient scope to counter the anticompetitive effects of a merger (EU Horizontal Merger Guidelines, recitals 68-75). Incumbents' preferential access to intellectual property rights, innovation, or R&D or economies of scale can constitute entry barriers in this respect (EU Horizontal Merger Guidelines, recital 71). In addition, while assessing the effects of a merger, the European Commission also considers whether customers have countervailing buyer power (EU Horizontal Merger Guidelines, recitals 64-65). Even a supplier with a high market share cannot act independently and is constrained by its customers. Finally, the European Commission assesses whether a "*failing firm defense*" is applicable (EU Horizontal Merger Guidelines, recital 89).

[104] EU Horizontal Merger Guidelines, recital 8.

[105] *Id*. recital 38.

consider whether one of the merging parties holds a market share above 50%, or if one or both parties are ***important innovators***, even if their importance as innovators is not reflected in their market shares.[106]

As for the coordinated effects, the EU Horizontal Merger Guidelines assert that, in markets where innovation is essential, coordination may be more difficult, since innovations (particularly significant ones) may allow one firm to gain a major advantage over its rivals.[107] Therefore, the Commission considers that coordinated effects are unlikely to cause innovation competition concerns in mergers, because the complex and uncertain nature of R&D activities, the ability/potential to keep innovations secret, and the long-time period that it would take for competitors to find out if one party breaches coordination would make the monitoring of tacit and explicit coordination quite tricky with respect to innovation and R&D activities.[108]

In merger analysis, competition authorities also take into account the fact that mergers may generate significant ***efficiencies*****,** which are likely to reduce or reverse adverse unilateral effects. It is generally accepted that mergers which create efficiencies may enhance the merged firm's ability and incentive to compete, which may subsequently result in lower prices, improved product quality, enhanced services, or new products. Moreover, efficiencies also may lead to new or improved products, even if they do not immediately and directly affect the price.[109] The US Horizontal Merger Guidelines declare that, when evaluating the effects of a merger on innovation, competition authorities will consider the ability of the merged firm to conduct R&D activities more effectively. Such efficiencies may indeed spur innovation without affecting short-term pricing.

According to the US Horizontal Merger Guidelines, competition authorities "*also consider the ability of the merged firm to appropriate a greater fraction of the benefits resulting from its innovations. Licensing and intellectual property conditions may be important to this enquiry, as they affect the ability of a firm to appropriate the benefits*

[106] *Id*. recital 20.
[107] *Id*. recital 45.
[108] Katz, M. L. & Shelanski, H. A., "Mergers and Innovation," *Antitrust Law Journal* 74 1 (2007): 1-85, at 8.
[109] Horizontal Merger Guidelines, at 29.

of its innovation."[110] On the other hand, it is pointed out that cost savings in research and development may not be "*cognizable*" efficiencies, because they are difficult to verify or they may result from anti-competitive reductions in innovative activities. This is an example of the unduly strict standard of proof that the entities are faced with, when trying to rely on the efficiency defenses.

More recently, competition authorities have created novel innovation-based concepts or re-purposed traditional ones to address the effect of mergers on innovation,[111] although these also have their shortcomings and fall short of addressing the whole. One such example is ***potential competition***, which has been traditionally applied not only in merger control but also assessment of other competition law concerns. This focuses on a competitive constraint that may potentially arise (but has not yet actually arisen)[112] and considers entry by potential competitors (*i.e.*, undertakings that have real and concrete possibilities of entering to an existing relevant product market).[113] However, this concept may still be inadequate to address innovation-based R&D-related matters where no comparable product markets are yet in existence.[114]

The ***future market*** concept is considered to be an extension of potential competition as it seeks to evaluate potential competition which may take place in a future product market that does not exist at the time of evaluation.[115] Since it is not linked to an existing product market, it can be applied when the undertakings are currently or possibly competing with one another (*i.e.*, future entry) on the same actual product market. In other words, this concept helps the authorities evaluate innovation competition, independent of the respective undertaking's role in the current relevant

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[110] *Id*. 31.
[111] Such as, *Dow/Dupont* European Commission Case M.7932 – (Mar. 27, 2017), *BMS/Celgene* European Commission Decision No. Case IV/M. 9294 (July 29, 2019), *Abbvie /Allergan*, European Commission Decision No. Case COMP/M.9461 (2020)
[112] OECD - The Concept of Potential Competition – Note by the EU (June 10, 2021), https://one.oecd.org/document/DAF/COMP/WD(2021)21/en/pdf. at 9
[113] Colino S.M., Fournier K, Pais S., Ritzmann D., Dunne N. (2017), "The Lundbeck Case and the Concept of Potential Competition" Concurrences; European Night Services and others v Commission (1998), Merck and Generics UK v CMA (2021), Novartis/Glaxo Smith Kline's Oncology Business. (2015); Pfizer/Hospira, (2015), GE/Alstom (2015)
[114] Genzyme/Novazyme, FTC File no. 021-0026, (2013); Kern, B. R., "Innovation Markets, Future Markets, or Potential Competition: How Should Competition Authorities Account for Innovation Competition in Merger Reviews?" World Competition: Law and Economics Review 37 2 (2014): 173-206.
[115] *Id.*, at 6.

market. [116] Even though the future market concept is not linked to an existing product, it requires the evaluation of real and observable R&D efforts. Therefore, as this concept places heavy reliance on the success of R&D projects of the undertakings and concentrates on the future product market rather than innovation competition in general, it could fall short of safeguarding innovation as a whole.[117]

As another novel concept, ***innovation market analysis*** focuses on innovation itself and not the relevant market. It is believed to have been developed to eliminate the deficiencies that arise from the application of concepts of future markets and potential competition. Rarely applied until now, in *iRobot/Amazon* case, the FTC is considering whether the takeover would boost Amazon's market share in the market for connected devices and the retail market, and whether the home maps created by the iRobot vacuum could help Amazon in suggesting particular furniture customers are looking to buy and innovation regarding this issue would effect.[118] This analysis includes a step in defining the interdependencies between "market structure" and innovation. However, since it is not always possible to define the interdependencies due to uncertainty in innovation-heavy markets, this could fail to capture all types of innovation concerns.

Cannibalization effect was first adopted in *Novartis/GSK Oncology* and the assessment was considered close to a unilateral effects approach. The Commission noted in its decision that the merged entity would internalize that investing in one of the clinical research programs for colorectal cancer could be expected to cannibalize future sales of its other clinical research program.[119] As the cannibalization effect concerns clearly identified existing products, the theory may fall short when authorities attempt to account for products that do not yet exist (like in *Dow/Dupont,* where the Commission introduced the *innovation space* concept; discussed in detail

[116] *Nielsen Holding/Arbitron*, FTC Matter no. 131 0058 (2014) It concerns a conditional approval of a merger between two undertakings that are active in audience measurement services. The FTC stated that the elimination of future competition between Nielsen and Arbitron would likely cause advertisers, ad agencies, and programmers to pay more for national syndicated cross-platform audience measurement services and lead to the decrease of future competition in relation to an innovative product.
[117] Genzyme/Novazyme, FTC File no. 021-0026, (2013); Kern, (2014) *Supra* note 114 at 21; Johnson & Johnson/Tachosil in which the parties have abandoned the transaction due to the competition concern.
[118] iRobot/Amazon, FTC File No. 001-36414 (2022), It concerns the potential acquisition of iRobot by Amazon which is currently under investigation by FTC.
[119] *Novartis/Glaxo Smith Kline's Oncology Business*. European Commission Decision No. Case COMP M.7275, (Jan. 28, 2015) at 104.

below). This is indeed the main challenge in assessing potential innovation. Evolving from the cannibalization effect, ***killer acquisitions*** is a theory, where the incumbent firm acquires the innovating firm, for eliminating its innovative efforts and any future competition it may have brought.[120] Discussed widely in the doctrine, this theory was also expanded into the concept of "***reverse killer acquisitions***" where the acquiring entity shuts down the development of its own product line post-merger. [121]

Closely linked with the above, the ***concept of nascent potential competition***[122] refers to an acquisition that would control the innovation while eliminating the competitive danger for a firm, whose potential innovation offers a serious threat to an established competitor yet may not be considered as such, given the financial resources and breadth of the new entrant.[123] Overall, it requires a link between the future market and nascent competitors. However the acquisition of a nascent competitor is nearly impossible to challenge, given the difficulty in establishing with sufficient precision and certainty whether there is really a potential competition, as it requires a presumption that a certain actor will turn into a competitor based on some vague circumstantial evidence.[124]

In line with the above, safeguarding innovation incentives and finding the proper tools for that is widely recognized as a concern and challenge for competition enforcement authorities. In recent times, several high-profile mergers have been scrutinized, especially concerning their potential effects on innovation. However, the relationship between competition and innovation is still far from clear, and the findings and conclusions of academic research on the relationship between market

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[120] *See*, Crémer, J., De Montjoye, Y. & Schweitzer, H., (2019) Competition Policy for the digital era; A report commissioned by the European Commission, *available at* http://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf where the authors state that "killer acquisitions" are observed in the pharmaceuticals industry in which an incumbent acquires a potential competitor with an innovative project that is still at an early stage of development and subsequently terminates the development of the target's innovation in order to avoid a replacement effect. *See also* Cunningham, C., Ederer, F., and Ma, S, (2020) Killer Acquisitions. Journal of Political Economy, Vol. 129, No. 3, 649–702, March 2021, available at http://dx.doi.org/10.2139/ssrn.3241707

[121] *See* C. Caffarra, G. Crawford, T. Valletti, *"How Tech Rolls": Potential Competition and "Reverse" Killer Acquisitions*, mimeo (May 2020) *available at* https://voxeu.org/content/how-tech-rolls-potential-competition-and-reverse-killer-acquisitions). The authors explain that in cases of "buys instead of builds," the incumbent acquires an already-well-established product and shuts down the development of its own product, or never starts developing a competing product; which they call the "*reverse killer acquisitions*" (as opposed to "*killer acquisitions*" in which the incumbent firm acquires the innovating firm and terminates the innovative efforts of the latter, post-merger.)

[122] Hemphill C.S., Wu T., "Nascent Competitors", University of Pennsylvania Law Review, Vol. 168 (2020) 1879.

[123] *Id.*

[124] OECD - The Concept of Potential Competition – Note by the EU (June 10, 2021), https://one.oecd.org/document/DAF/COMP/WD(2021)21/en/pdf. at 9

structure and innovation are by no means unambiguous.[125] In this regard, Richard Gilbert states that "*we remain far from a general theory of innovation competition.*"[126] According to Gilbert, the available literature has amply demonstrated that competition may be either good or bad for innovation, depending on the circumstances.

III. Basic Theoretical and Empirical Background on the Relationship Between Competition and Innovation

The theoretical debate on the relationship between competition and innovation goes back to the works of Joseph A. Schumpeter (1942) and Kenneth Arrow (1962), who reached opposing conclusions on this fundamental issue.[127]

According to the Schumpeterian approach, the reduced competition will lead to more innovation, as long as "*competition for the market*" remains in effect.[128] Schumpeter emphasized that a significant portion of innovation is generated by large firms operating in oligopoly markets, not by small firms in atomistic (*i.e.,* highly competitive) markets. Schumpeter's position was summarized by Shapiro in simple terms as follows: "*The prospect of market power and large scale spurs innovation*."[129] In the Schumpeterian view, large firms and concentrated market structures promote innovation[130] and less competition leads to more innovation, because the profits that can be generated as a result of innovative activities will be higher in such markets.[131] Schumpeter's theory of "*creative destruction*," has been described as a never-ending process.[132] The innovation brought by competitors will drive even the

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[125] Haucap, J., MERGER EFFECTS ON INNOVATION: A RATIONALE FOR STRICTER MERGER CONTROL? (University of Düsseldorf, Düsseldorf Institute for Competition Economics, Discussion Paper No. 268, Sep. 2017) *available at* http://www.dice.hhu.de/fileadmin/redaktion/Fakultaeten/Wirtschaftswissenschaftliche_Fakultaet/DICE/Discussion_Paper/268_Haucap.pdf at 3.

[126] Gilbert, R. "Looking for Mr. Schumpeter: Where Are We in the Competition-Innovation Debate?" In Jaffe, A. B. Lerner J. & Stern S. (eds.), *Innovation Policy and the Economy* 6 (2006): 159-215 *available at* http://www.nber.org/chapters/c0208.pdf at 206.

[127] Oxera, *Mergers And Innovation: Fewer Players, More Ideas?* (2017) *at* https://www.oxera.com/agenda/mergers-and-innovation-fewer-players-more-ideas/

[128] *Id.* at 1.

[129] Shapiro, C., *Competition and Innovation: Did Arrow Hit the Bulls Eye?* In J. Lerner and S. Stern, Ed.s, *The Rate and Direction of Inventive Activity Revisited* University of Chicago Press, 361-404 (2012), *available at* https://www.nber.org/chapters/c12360.pdf at 363.

[130] Gilbert, (2006) *supra* note 126 at 160.

[131] European Commission (2016) Competition Policy Brief EU merger control and innovation 1, *available at* http://ec.europa.eu/competition/publications/cpb/2016/2016_001_en.pdf

[132] Seiler, M., Innovation Competition In EU Merger Control (2018) (on file with the University of St. Gallen) *available at* http://www.mbl.unisg.ch/sites/default/files/Seiler_Markus_Read_Full_Thesis_0.pdf at 9-10.

most efficient firms out of the market unless the latter can come up with its own innovations in order to continue to compete in the market.

On the opposite side, Kenneth Arrow concluded that the incentive to innovate is diminished under monopoly market conditions compared to competitive markets, due to the monopolist's financial interest in maintaining the *status quo*.[133,134] For instance, Arrow compares an unchallenged monopolist who considers implementing a cost-reducing innovation in a market with exclusive IP rights, with a firm operating in a perfectly competitive market which considers the same innovation. In Arrow's view, the incentive to innovate can be measured by the difference in profits that a firm can expect to earn by either investing or not investing in R&D activities. According to this analysis, the result is that the competitive situation provides higher incentives to innovate for the firms in question. This is because the monopolist would be replacing an already high level of profits by an even higher one, while the competitive firm would be able to replace and supplant a low level of profits by a substantially higher one.[135]

Arrow's fundamental idea is that a company that is already earning substantial profits has a vested interest in protecting the *status quo* and is thus less likely to be the initiator or pioneer of disruptive new technologies. In other words, the secure monopolist's incentive to launch or achieve a process innovation is lower than that of a competitive firm, because the monopolist with lower costs will merely replace itself in the relevant market, while the competitive firm will (by assumption) conquer the market, in which it previously earned little or no economic profits. Tirole called this "*the replacement effect*."[136] In other words, Arrow emphasized that "*[t]he pre-invention monopoly power acts as a strong disincentive to further innovation*"[137] and,

[133] Arrow, K., Economic Welfare and the Allocation of Resources for Invention. In: The Rate and Direction of Inventive Activity: Economic and Social Factors. Universities-National Bureau Committee for Economic Research, Committee on Economic Growth of the Social Science Research Council. Princeton University Press 609-626 (1962).
[134] Shapiro, (2012) *supra note* 129 at 362.
[135] Schulz, N., REVIEW OF THE LITERATURE ON THE IMPACT OF MERGERS ON INNOVATION (ZEW Discussion Paper No. 07-061, 2007) *available at* https://www.econstor.eu/bitstream/10419/24635/1/dp07061.pdf at 8.
[136] Shapiro, (2012) *supra note* 129. *See also* Tirole, J. (1997), The Theory of Industrial Organization. Cambridge, MA: MIT Press, at 392.
[137] Arrow, (1962) *supra* note 133 at 620.

Carl Shapiro condensed Arrow's position into its most succinct summarization: "*Product-market competition spurs innovation*."[138]

Numerous authors have empirically tested the different conclusions of Schumpeter and Arrow. For example, Stephen Nickell, by using data obtained from 680 firms in the UK, has presented evidence that competition, as measured by increased numbers of competitors or by lower levels of rents, is associated with a significantly higher rate of total factor productivity growth.[139] Moreover, Blundell, Griffith, and Van Reenen have investigated the statistical robustness of the effect of market structure on innovation and its economic interpretation.[140] As a result, they have come up with an estimated innovation equation and a value equation on a firm panel level data source and found that "*less competitive*" industries (*i.e.,* those with lower import penetration levels and higher concentration levels) had fewer aggregate innovations. Nevertheless, within industries, it was the large market share firms who tended to commercialize a higher number of innovations, even though increased product-market competition in the industry tended to stimulate innovative activity. The authors also determined that there was a direct effect of innovation in the stock market value model (in terms of levels or differences). In other words, higher market share firms tended to benefit the most from innovations. Thus, Blundell, Griffith, and Van Reenen argue that their results are in line with models in which large market share firms have more significant incentives to innovate pre-emptively.

The works of both Nickell and Blundell *et al* have purported to estimate a positive "linear" effect of competition on innovation. However, other authors have discovered a "non-linear" relationship between innovation and competition.

In this regard, Aghion and Griffith have surveyed the theoretical and empirical literature on competition, entry, growth, and examined the relevance of distance to the technology frontier.[141] In their book, the authors systematically challenged theoretical models about the relationship between competition and innovation with

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[138] *Id*. at 362.
[139] Nickell, S. J., "Competition and Corporate Performance," *Journal of Political Economy* 104:4, August, (1996) 724–746.
[140] Blundell, R., Griffith, R. & Van Reenen J., "Market Share, Market Value and Innovation in a Panel of British Manufacturing Firms." *Review of Economic Studies* 66 3 (Jul. 1999): 529–554.
[141] AGHION, P. & GRIFFITH, R., COMPETITION AND GROWTH: RECONCILING THEORY AND EVIDENCE. CAMBRIDGE, MA: MIT PRESS (2005).

empirical data, which either invalidated the investigated models or suggested useful changes in the modeling strategy. On the theoretical side, they have built upon Schumpeterian growth models, in which economic growth results from entrepreneurial innovations. In this theoretical paradigm, innovative activities are induced and stimulated by the economic environment, and each new innovation destroys the monopoly rents that had been generated by the previous innovators. The authors conclude that existing theoretical models in an industrial organization and new growth economics all predict a negative effect of competition on innovation and growth, asserting that: Competition is bad for growth because it reduces the monopoly rents that reward successful innovators.

Practically, Aghion and Griffith illustrate the use of novel techniques that have been implemented by applied micro econometricians in order to analyze the random process of innovation and patenting, to develop adequate measures and instruments for competition and entry. To reconcile theory and empirical evidence, they distinguish between pre- and post-innovation rents, and propose that innovation may be a way to "escape competition." Furthermore, they test this idea by using microeconomic data, hypothesizing that more intense competition may potentially lead to more innovation because it reduces pre-innovation rents by more than it reduces post-innovation rents. The authors assert that whether the "escape competition" effect or the "rent dissipation" effect dominates will depend on the technological distance between firms in that industry. Ultimately, the balance between these two effects will depend upon the distribution of technological characteristics across sectors.

Aghion *et al*[142] predict that there is an inverted-U relationship between competition and innovation, and demonstrate that this prediction is entirely consistent with the empirical evidence. This means that, for low levels of competition, innovation initially increases as competition becomes more intense; however, after reaching its peak, innovation declines as competition intensifies further.[143] The authors develop a *duopoly model* where, at each point in time, the industry can be either in a "*neck-and-neck*" state or in a "*leader-laggard*" state. In the former state, both firms have the

[142] *Id*. at 701-728.
[143] Oxera, *Supra note* 127 at 1.

same marginal costs, while in the latter, one of them (*i.e.,* the leader) is more efficient than the other (*i.e.,* the laggard).[144] Focusing on cost-reducing innovations, it is shown that, in the "*neck-and-neck*" scenario, firms have stronger incentives to innovate if the competition is more intense. This is what Aghion *et al* call the "*escape competition*" effect. In this scenario, competition may increase the incremental profits for firms from innovating and thereby encourage R&D investments aimed at escaping competition. This incentive is particularly valid in sectors where the incumbent firms are operating at similar technological levels. However, in sectors where laggard firms generate innovations with already low initial profits, product-market competition will mainly affect post-innovation rents. This means that an increase in competition gives a laggard firm lower incentive to innovate.[145]

It is the Schumpeterian effect that the rents that can be captured by the laggard firm that succeeds in catching up with its rivals by innovating have been reduced. By combining these two effects, Aghion *et al* arrive at an inverted-U-shaped relationship between competition and innovation.[146,147] A similar inverted-U-shaped relationship was also found between competition and patent counts in Aghion *et al*.[148] When the level of competition is low, a substantial equilibrium fraction of sectors involve *neck-and-neck* competing incumbents, so that, taken as a whole, the *escape competition effect* is more likely to dominate the *Schumpeterian effect*. On the other hand, when the level of competition is high (*i.e.,* in conditions of fierce competition), the Schumpeterian effect is more likely to dominate, because a more significant fraction of sectors in equilibrium will have innovation being generated and created by laggard firms with low initial profits.

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[144] Aghion, P., Bloom N., Blundell R., Griffith R. & Howitt P., "Competition and Innovation: An Inverted-U Relationship." *The Quarterly Journal of Economics* 120 2 (May 2005): 701-728.
[145] The assumptions of the model are such that a leader does not have incentives to innovate in Aghion *et al.,* (2005)
[146] Gilbert, Riis & Riis, extend the stepwise models in Aghion *et al*., (2005) to (symmetric) oligopolies and demonstrate that the predictions of the effects of competition on innovation from the duopoly models do not generalize to oligopolies. Gilbert, R., Riis C., & Riis E. S., *Stepwise Innovation By An Oligopoly*, (2018), *at* https://eml.berkeley.edu/~gilbert/Selected%20Papers/Stepwise%20innovation%20by%20oligopoly_IJIO.pdf
[147] Jullien, B., & Lefouli, Y. HORIZONTAL MERGERS AND INNOVATION (Toulouse School of Economics, Working Papers No. 18-892, 2018) *available at* https://www.tse-fr.eu/sites/default/files/TSE/documents/doc/wp/2018/wp_tse_892.pdf at 5.
[148] Aghion, P., Blundell, R., Griffith, R., Howitt, P., and Prantl, S., "The Effects of Entry on Incumbent Innovation and Productivity." *Review of Economics and Statistics* 91 1 (2009): 20–32.

Moreover, Carl Shapiro aimed to develop a more specific framework to address the role of *competition policy* in promoting innovation, instead of addressing broader questions regarding innovation policy or competitive strategy.[149] Therefore, Shapiro chose to focus his efforts on the possible effects of a proposed merger on innovation. As a result, he argues that the approaches of Schumpeter and Arrow are not as entirely incompatible as they seem and that they are actually mutually reinforcing, at least as far as competition policy is concerned. Shapiro reasons that, in order to understand the relationship between innovation and competition in a specific market, one should focus on the "*incentive*" and "*ability*" of firms to engage in innovative activities. According to Shapiro, the incentives to innovate can be assessed using three fundamental guiding principles: (i) *contestability,* (ii) *appropriability*, and (iii) *synergy*.[150] Contestability relates to the nature of *ex-post* product-market competition. Appropriability concerns the possibilities for the successful inventor to capture the social benefits of its invention. Moreover, synergies are linked with the capabilities of enhancing innovation by combining complementary assets. In other words, the contestability and appropriability factors relate to the *incentive* to innovate, while the synergies factor relates to the *ability* to innovate.[151]

There are also certain studies that focus on the market players` influences on public policy and how, if any, this affects the regulators and their approach to concentrations and innovation in the market. Research indicates that lobbying and campaign contributions are strong determinants in terms of public policy outcomes,[152] although large-scale data on the subject is very difficult to collect considering that such activities are not transparently exercised, and the interpretation of the data is even more challenging.[153] T. Philippon notes that lobbying and campaign contributions' effects on policymaking, free market, competition, and

[149] Shapiro, (2012) *supra note* 129.
[150] Oxera, *Supra note* 127 at 2.
[151] De Streel, A. & Larouche, P., Disruptive Innovation and Competition Policy Enforcement (Oct. 20, 2015). OECD Working Paper DAF/COMP/GF(2015)7 *available at* SSRN: https://ssrn.com/abstract=2678890 , recital 41.
[152] OECD, Lobbyists, Governments and Public Trust Volume 3 Implementing the OECD Principles for Transparency and Integrity in Lobbying (2014) at https://www.oecd.org/gov/ethics/lobbyists-governments-trust-vol-3-highlights.pdf)
[153] Dellis K., Sondermann, D., Lobbying in Europe: New Firm-Level Evidence 2 (Eur. Cent. Bank, Working Paper No. 2071, 2017); Powell L. & Wilcox, C., "Money and American Elections" in Jan E. Leighley, ed. The Oxford Handbook of American Elections and Political Behavior (2010).

innovation, is a key problem of the American economy.[154] High campaign contributions are found to be correlated with notable decreases in terms of nonmerger enforcement, signalling the strategical nature of contributions by the corporate players to guard themselves from future antitrust scrutiny.[155] While lobbying comes in handy for policy-makers to keep the pulse of sectors by receiving useful information on the fast evolving technological changes and innovations,[156] a contrasting view suggests that lobbying is a means to rent seeking rather than beneficial sharing of information, as businesses often attempt to protect their rents by way of supressing the new entrants, or even blocking entry entirely by way of lobbying.[157] Accordingly, although lobbying and overall participation in the process of policymaking are vital elements of democracy, the rent seeking and blocking of market entry aspects can be problematic and harm the economy, competition and innovation[158] and manipulate free-market dynamics.

IV. Innovation Concerns by Competition Enforcement Authorities in Merger Control

Although the literature so far provides useful insights for understanding the relationship between competition and innovation, it does not directly address the assessment of the impact of a particular merger on the incentives of firms in the relevant market to innovate.

In his literature survey on the economic studies focusing on the link between mergers and innovation, Norbert Schulz concluded that at an aggregated level the effect of mergers and acquisitions on innovation was *negligible* or *negative*.[159] However putting aside the aggregate view, he noted that when a more disaggregated strategy is taken, the positive effect of innovation could be evidenced. Importantly, he observed that there was a distinction between process and product

[154] Philippon, T. *The Great Reversal: How America Gave Up on Free Markets* Belknap Press, 151 (2019)
[155] Gutiérrez G., Philippon, T. HOW EU MARKETS BECAME MORE COMPETITIVE THAN US MARKETS: A STUDY OF INSTITUTIONAL DRIFT National Bureau of Economic Research, Working Paper No. 24700, 2018) 25-29.
[156] Gregor M. CORPORATE LOBBYING: A REVIEW OF THE RECENT LITERATURE, (Charles University, Inst. of Econ. Stud. Working Paper, No. 32/2011, 29, 2011).
[157] Grossman G.M., Helpman, E. PROTECTION FOR SALE, (The American Econ. Rev., Working Paper Vol. 84, No. 4, 1994); 833-850. Grossman G.M., Helpman, E. Special Interest Politics MIT Press (2002); Philippon, (2019) *supra note* 154 at 160-161.
[158] Philippon, (2019) *supra note* 154*,* at 161.
[159] Schulz (2007) *supra note* 135.

innovation cases and also that innovation activities increased when the merging partners had complementary technologies.[160] Most of the studies included in the survey did not consider a specialized industry, but rather used data which encompassed many diverse industries. He also pointed out that these studies had shown the importance of heterogeneity and that a balanced view was imperative as the impact of mergers on innovation could be thoroughly assessed only if the study also focused on the effect of innovation on mergers.[161]

With this in mind, the following sections will address how the competition authorities assess mergers that have the potential to affect innovation incentives, and the ideas and factors shaping the relevant merger control enforcement systems.

4.1 The Presumption that Horizontal Mergers Reduce Innovation Incentives

Carles Esteva Mosso, then Deputy Director-General for Mergers at the Directorate-General for Competition of the European Commission, has declared that the economic principles related to the effects of mergers on innovation (*e.g.,* internalization of the competitive effects of innovation, effects of appropriability, complementarity of innovation efforts, and synergies, among others) do not establish an economic (nor legal) presumption that mergers necessarily reduce innovation and harm future market competition in the absence of efficiencies. However, Mosso has also expressed the view that these economic principles nevertheless provide useful guidance for merger control, and establish a solid economic foundation for the concern that, under certain conditions, a merger may reduce innovation competition, to the detriment of consumers.[162] Mosso adds that, to understand whether a horizontal merger will have a negative impact on innovation, it is necessary to conduct a detailed examination of the available evidence in each case, in particular, with respect to (i) the overlaps between the parties' R&D capabilities and projects, (ii) the importance of the rival innovators, and (iii) the barriers to entry.[163]

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[160] *Id*. at 4.
[161] *Id*. at 2-3.
[162] Mosso, C. E., 'Innovation in EU Merger Control', *66th ABA Section of Antitrust Law Spring Meeting*. (Apr. 12, 2018) Washington, *available at* http://ec.europa.eu/competition/speeches/text/sp2018_05_en.pdf at 5.
[163] *Id*. at 8.

Despite this cautious approach regarding a presumption of harm to innovation, Shapiro argues that:

> ….we *do* know enough to warrant a presumption that a merger between the only two firms pursing *[sic]* a specific line of research to serve a particular need is likely to diminish innovation rivalry, absent a showing that the merger will increase appropriability or generate R&D synergies that will enhance the incentive or ability of the merged firm to innovate.[164]

RBB Economics, referring to a more recent theoretical paper co-authored by the European Commission's Chief Economist Tommaso Valletti and his colleagues, Guilo Federico and Gregor Langus, from the same department,[165] has argued that the Commission holds a presumption that horizontal mergers can be expected to reduce innovation incentives as a result of a standard unilateral effect.[166] They believe this is unjustified and that innovation incentives may depend on various co-existing factors (without one factor necessarily dominating).

The fundamental factor underlying the innovation concerns of competition enforcement authorities in the assessment of horizontal mergers is that the merging parties can internalize the constraint between the rival products and that this may give the merged entity an incentive to reduce its innovation efforts. In the extreme scenario, the merged entity might even discontinue one of the products in order to avoid '*cannibalizing*' the other product's sales. The analysis of competition authorities relies not only on the closeness assessment of competition between the two products, but also on the competitive constraint exerted by the rivals' products.[167]

However, various authors have criticized this finding of harm by arguing that the assessment of the impact of a merger on R&D investments requires a complex balancing act, which involves many different factors that can affect the incentives to innovate. (See Section Five below).

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[164] Shapiro, (2012) *supra note* 129 at 368.
[165] Federico, G., Langus G., Valetti T., A SIMPLE MODEL OF MERGERS AND INNOVATION (CESifo Working Paper No. 6539, June 2017) *available at* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3005163 .
[166] RBB Economics, *An Innovative Leap Into The Theoretical Abyss: Dow/Dupont And The Commission's Novel Theory Of Harm*, (2017), *at* http://www.rbbecon.com/downloads/2017/07/RBB-Brief-54.pdf at 1.
[167] *Id*.

4.2 The (Changing) Presumption that Non-Horizontal Mergers Do Not Reduce Innovation Incentives

Authorities analyze various factors while assessing the innovation effects of a merger, which are usually discussed under horizontal merger cases, as non-horizontal mergers[168] have generally been deemed to give less cause for concern. Considering that a non-horizontal merger does not eliminate a rival or an innovation process from the market, but can also potentially create various efficiencies through integrated product portfolios, there has been less scrutiny.[169] These transactions raise two types of anti-competitive concerns: (i) unilateral effects, such as tying, bundling and other similar *foreclosure* practices and (ii) coordinated effects, such as increased risk of coordination among the remaining competitors.[170] In such mergers, products of the merging parties do not directly compete nor are they crucially important in the parties' supply chains. Thus, vertical and conglomerate mergers have been generally considered not to raise anti-competitive concerns, except for unilateral effects of foreclosure practices.[171] However, recently authorities have been focusing more on the anticompetitive effects of non-horizontal concentrations and the need for stricter enforcement.[172]Especially, in the sectors where significant amounts of innovation are involved (*e.g.*, digital sectors), the merging parties' capability to innovate similar products in an ecosystem could result in certain anti-competitive concerns in terms of creating innovation even in conglomerate mergers.[173] Occasionally, even without bundling concerns, the innovation theories of harm regarding conglomerate mergers might emerge in numerous ways such as reduced research and development incentives of the entrants, especially in cases the merging parties produce complementary products.[174]

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[168] In non-horizontal mergers, **vertical integrations** can be defined as mergers between non-competing companies that are positioned at different levels of the production chain, whereas **conglomerate mergers** involve the merging of undertakings that operate in unrelated markets.

[169] *Id*.

[170] European Commission, Directorate General for Competition, The Impact of Vertical and Conglomerate Mergers on Competition, (2004) at 2

[171] Garcés E., Gaynor, D. "Conglomerate Mergers: Developments and a Call for Caution" *Journal of European Competition Law & Practice*, Vol 10, Issue 7, (2019) 457–462, at 457-8.; See e.g., European Commission Guidelines on The Assessment of Non-Horizontal Mergers, 2008), at 20.

[172] *See* Chapter 5 on US 2020 Vertical Merger Guidelines and next steps for further discussion.

[173]Regibeau P. & Lianos I., Digital Mergers: A Primer (2020) *available at* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3837281 at 12.

[174] Etro, F. CONGLOMERATE MERGERS AND ENTRY IN INNOVATIVE INDUSTRIES, 2-3 University Ca' Foscari of Venice, Dept. of Econ. Resch., Working Paper Series No. 19/WP/2018 (2018)

4.3 Main Factors Analysed in Assessing Innovation Competition in Merger Control

The Commission builds its assessment of the effects of mergers on innovation competition mainly on the analysis of the following factors: (i) market characteristics and market structure, (ii) the importance of the merging parties as innovators, (iii) the intensity of the innovation rivalry between the merging parties in innovation spaces, (iv) the impact on the incentive to innovate and evidence concerning the effects of innovation, and (v) the capacity of the remaining competitors to offset the loss in innovation competition. This type of analysis was mentioned in the Commission's *Dow/DuPont* decision, as well as other recent cases.[175]

4.3.1 Market Characteristics and Market Structure

Regarding the market characteristics and structure, the Commission aims to identify and analyze the following aspects: (i) the key drivers for innovation in a given industry, (ii) whether the concern is about *product* innovation or *process* innovation, (iii) the degree of uncertainty with respect to innovation, (iv) whether entry or expansion barriers are present in the relevant market, (v) whether customers are likely to switch to innovative products (*i.e.,* contestable environment), (vi) the strength of intellectual property rights (*i.e.,* appropriability), (vii) the time to market of an innovation, (viii) other industry-specific features, such as regulatory pressure, (ix) whether other relevant innovation competitors are present in the market (*i.e.,* concentration at the industry level and in innovation spaces), and (x) if the innovation capabilities of the other players are comparable with those of the merging parties (*e.g.,* similar assets, expertise, and financial strengths/resources). The Commission also takes into account how past mergers have affected innovation competition in the industry.[176, 177]

[175] Mosso, (2018) *supra note* 162 at 8.
[176] *Dow/DuPont*, European Commission Case M.7932 – § V.8.4 – V.8.6 recitals 2039-2395 (Mar. 27, 2017),
[177] Seiler, M. (2018) *supra* note 132, at 40.

In this regard, it is worth noting that the Commission assesses the level of concentration as regards innovation both at the *industry* level and at the level of *innovation spaces*.[178]

The UK`s Competition and Markets Authority (CMA) adopts a stricter approach in assessing mergers that might affect innovation negatively. The analysis of the innovation effects of mergers is parallel to that of price changes in the market, given that innovation may lead to offering more innovative products with lower prices.[179] On the other hand, CMA notes that the traditional assessment based on the impact of price changes may not be sufficient to establish other competitive parameters, such as quality and innovation.[180] According to the CMA Merger Guidelines ("***CMA Guidelines***"), "*innovation will play a key role in some merger investigations"* and that "*innovation is a key aspect of competition between the merger firms and the level or pace of future innovation or product development is threatened by a merger.*"[181] The Guidelines refer to quantity sold, service quality, product range, product quality and innovation. The extent to which each of the parameters are assessed in an individual case will depend on the aspects of the merging firms' competitive offers to customers over which the firms compete, and which may be harmed as a result of the merger.[182] Thus, the CMA favors a strategy that focuses more on non-price effects whereby the CMA assesses whether the actions of the undertakings may have a detrimental impact on innovation or reduce the amount of funds that will be invested in R&D projects and product quality.[183]

In the US, similar to the EU approach, both price and innovation effects are important due to their effects on consumers in the assessment of mergers, and the

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[178] *Dow/DuPont*, European Commission Case M.7932 § V.8.6. The "innovation spaces" concept introduced by the Commission in *Dow/DuPont* (4.4) refers to an abstract potential of future innovation, that is not related to any specific/ pipeline products or technology markets. Thus, it is "a current, dynamic, and forward-looking assessment of the competition in innovation" which would allow competition authorities to assess the effect of a merger where a product may not yet exist. Kokkoris I. & Valletti T, "Innovation Considerations in Horizontal Merger Control" *Journal of Competition Law & Economics*, Volume 16, Issue 2, June 2020, 220–261.

[179] Bon J, Fung SS, Reilly A, Ridout T, Ryan R, Walker M. *Recent Developments at the CMA*: 2020-2021. Rev Ind Organ. 2021;59(4):665-692. doi: 10.1007/s11151-021-09848-5

[180] CMA Digital Competition Expert Panel recommendations (2019),

[181] CMA Merger Assessment Guidelines, (CMA129), (2021).

[182] *Id.* based on the evidence before it, the CMA will consider whether a merger would lead to: the merged entity being able to profitably and unilaterally raise its prices, worsen its quality or service and non-price factors of competition, or reduce innovation efforts at one or more of the pre-merger businesses.

[183] CMA, *Submission from the Competition and Markets Authority to the Business, Innovation and Skills Committee's inquiry into the Government's industrial strategy*, (2016).

value of innovation is well recognized and emphasized by the DOJ officials.[184] Indeed, one of the main issues specifically addressed by the new Horizontal Merger Guidelines in 2010 ("***2010 Guidelines***") issued jointly by the FTC and the DOJ is "restraints on innovation" along with the other substantive merger concerns that are classified as: (i) exclusion, (ii) unilateral effects and (iii) coordinated effects.[185] The 2010 Guidelines also specifically regulate mergers limiting innovation and product variety.[186]

For the sake of completeness, the DOJ's approach differs from the FTC's approach on innovation in a way that the DOJ uses a traditional approach whereas the FTC uses the innovation markets approach. Overall, traditional merger policy in the US is mainly conducted with static analysis that basically focused on the impact of the transaction over prices and generally disregarded dynamic considerations like research and development.[187] Nevertheless, the reference to innovation as "*a force that could make static measures of market structure unreliable or irrelevant*"[188] plays a significant role in the USA merger control assessments.

The *Sabre/Farelogix* case provides a comparative outlook regarding the significance of the nature of the competitive constraints over formalistic market definitions in merger control regimes in the USA and the UK. Accordingly, the market definition appears to have a substantial role in the US District Court's decision in Sabre's favor by overruling the DOJ's decision concluding that Sabre's platform does not compete with Farelogix's distribution product in a relevant market definition under US merger control regime.[189] On the other hand, the CMA's approach[190] emphasized the assessment of competitive constraints irrespective of the markets whereby the merging parties operate and yet focused more on impact of the transaction. To that

[184] Kramer R., Chief, Litigation II Section, Antitrust Division, US Department of Justice, Antitrust Considerations in International Defense Mergers, (May 4, 1999) (the more important that innovation becomes to society, the more important it is to preserve economic incentives to innovate" and "as important as price competition is to us, a second major and possibly even greater concern is maintaining competition for innovation.); *see* M. L. & Shelanski, H. A., "Mergers and Innovation" *Antitrust Law Journal* 74 1 (2007): 1-85.
[185] Hovenkamp, H., "Harm to Competition Under the 2010 Horizontal Merger Guidelines." Review of Industrial Organization 39 1-2 (Aug. 2011) at 3.
[186] *Id.*
[187] *Id.*
[188] *Id* at 111.
[189] United States v. Sabre Corp. et al. 19-1548, (2020) Opinion of Judge Stark.
[190] Sabre Corporation v CMA, (Case 1345/4/12/20, 21.05.2021).

end, it may be argued that the CMA Guidelines underline the growing significance of competitive assessment over mere and strict market definition.

4.3.2 The Importance of the Merging Parties as Innovators

The Commission holds the view that a merger between two talented innovators may significantly impede innovation competition in the relevant market.[191] A party's importance as an innovator may not correspond directly to its overall size, its overall investment in R&D activities, or its market share at the industry level—as Seiler has observed, the impediment to innovation competition is most significant and pronounced if the merging parties are important innovators in the same innovation space.[192] Thus, the Commission suggests employing data on the quality-rated patent share of the undertakings or the firms' share in successfully launched new innovative products or active ingredients (based on turnover in the downstream markets), if market share or other similar measures are considered to be inadequate for reflecting the innovation strength of the merging parties.[193]

4.3.3 The Intensity of Innovation Rivalry Between the Merging Parties in Innovation Spaces

To analyze the intensity of innovation rivalry between the merging parties in innovation spaces, the Commission examines whether the two merging parties are close innovation competitors and evaluates whether they have overlapping lines of research and or overlapping early pipeline products. Closeness is an essential factor in assessing the extent of the "*cannibalization effect*," *e.g.,* how much sales the two merging parties would take away from one other in the absence of the merger.

4.3.4 The Impact on the Incentive to Innovate and Evidence Regarding the Effects of Innovation

The assessment of a merger's impact on the incentive to innovate is mainly based on the extent of the cannibalization effect. The term 'cannibalization' is used for the negative externality that rival firms exercise on each other through their innovation efforts in the same innovation spaces. A merger offers the merging parties the opportunity to internalize these negative externalities and is therefore likely to cause

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[191] *Id.* Recital 2599.
[192] Seiler, (2018) *supra* note 132, at 44.
[193] *Dow/DuPont*, European Commission Case M.7932 (Mar. 27, 2017), *available at* https://ec.europa.eu/competition/mergers/cases/decisions/m7932_13668_3.pdf, recitals 2426 ff.

a reduction in their innovation efforts in overlapping lines of research and pipeline products. As a result, one of the overlapping projects of the merging parties may be discontinued or delayed after the merger. Product variety may be reduced, or the future competitive pressure between the merging firms may be eliminated. The overall probability that an innovative product will be brought to the market may, therefore, be diminished too.[194]

In its analysis of the transformation of the incentives to innovate in the post-merger market, the Commission takes into account evidence from documents obtained from the merging parties about their future R&D plans and their projected reductions in innovation efforts.[195]

4.3.5 The Capacity of Remaining Competitors to Offset the Loss in Innovation Competition

The Commission evaluates whether the remaining competitors are able and willing to compensate or offset the reduction in innovation competition as a result of the merger, in the innovation spaces targeted by the merging parties and at the industry level.[196]

4.4 Theoretical Literature Influencing the Innovation Concerns of Competition Authorities

The primary concern of competition authorities regarding innovation effects of mergers is that a merger between two out of a limited number of innovators is likely to reduce competition in innovation, and thus, limit the overall rate of innovation in the relevant market. In this regard, Shapiro's proposal is that the antitrust agencies should determine: (i) whether the proposed merger significantly reduces contestability (*e.g.,* the future rivalry between the merging parties, which is based on the calculation of an *innovation diversion ratio*), and (ii) whether the merger nonetheless enhances innovation by increasing appropriability or enabling merger-specific synergies.[197] Accordingly, the recent economics literature supporting the

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[194] Seiler, (2018) *supra* note 132 at 41.
[195] *Dow/DuPont*, European Commission Case M.7932 – §V.8.4 – V.8.6 recitals 2039-2395 (Mar. 27, 2017), *available at* https://ec.europa.eu/competition/mergers/cases/decisions/m7932_13668_3.pdf.
[196] *Id.* recitals 3225 ff.
[197] De Streel, A. & Larouche, P., DISRUPTIVE INNOVATION AND COMPETITION POLICY ENFORCEMENT recital 41 (Oct. 20, 2015) (OECD Working Paper DAF/COMP/GF(2015)7) *available at* SSRN: https://ssrn.com/abstract=2678890 recital 41.

innovation concerns of competition enforcement authorities will be summarized and discussed below, on the basis of such "effects" that are taken into account in the assessment of impacts of mergers on innovation competition, namely (i) cannibalization, (ii) contestability, and (iii) appropriability.

4.4.1 *Cannibalization*

Cannibalization occurs when the introduction of innovative new products to a market can divert sales from existing products in that market. When an innovating firm merges with a rival, it may internalize the diverted sales of its rival. In other words, the post-merger firm will take into account the degree to which its innovations will cannibalize its sales.[198]

Therefore, the basic idea for merger control systems is that a merger can reduce the overlapping innovation efforts of the merging parties.[199] Since, in the post-merger period, the future products and the overlapping products developed by a merging party will "cannibalize" the merged entity's future products, the merged company would have a clear incentive to reduce this innovation competition in these overlapping areas. Thus, one consequence of such a merger would be a reduction in product variety and a loss in innovation rivalry between the merging innovators.[200] Before the merger, each party had an incentive to engage in R&D activities in order to develop new products, which, if successfully brought to market, would compete against the products of its competitors, but in the post-merger world, the incentive to innovate would be reduced, as the cannibalization effect is internalized.[201]

RBB Economics has clearly explained and illustrated the cannibalization effect with a straightforward numerical example, as follows:[202]

> A simple example can be used to illustrate the logic behind the cannibalisation concern. Suppose that firm A is contemplating an R&D investment of €50 in a new product that would deliver

[198] OECD, Mancini, J., "*Considering Non-Price Effects In Merger Control*" – Background note by the Secretariat, (2018), *at* https://one.oecd.org/document/DAF/COMP(2018)2/en/pdf
[199] Seiler, (2018) *supra* note 132 at 40-41.
[200] *Id*. at 42-43.
[201] RBB Economics (2017) *supra note* 166 at 1.
[202] *Id*. at 2.

> sales of €100. €20 of these sales would come from cannibalising firm A's own existing products, €40 would take place at the expense of firm B and €40 at the expense of firm C. Once the R&D cost (€50) and cannibalisation of its existing products (€20) are taken into account, firm A would find it profitable to undertake the investment since it would deliver a profit of €30 (= €100 - €50 - €20). Following a merger between firms A and B, however, the decision would be different. The new product would still deliver sales of €100, but it would now cannibalise €60 of its products (€20 from firm A and €40 from firm B). Due to this higher level of cannibalisation, the merged entity would no longer have an incentive to proceed with the R&D investment since it would obtain a negative profit (€100 - €50 - €60 = - €10).

Shelanski provides an alternative explanation as to how the cannibalization effect leads to "*downward innovation pressure.*" He notes that, as mentioned before, cannibalization occurs when an incumbent introduces a new product that competes with its pre-existing product, and some customers choose to abandon the incumbent's pre-existing product for this new product. This cannibalization effect naturally discourages incumbents from developing or introducing new products.[203] He describes this cannibalization effect and downward innovation pressure by using a simple mathematical relationship, as follows:

> Suppose that Firm 1 produces product A and that a rival, Firm 2, is developing innovation B, which will compete with A. If introduced, product B will draw a fraction d of its sales from customers who would otherwise buy A (thus d is the diversion ratio). Let MA be the profit margin that Firm 1 earns on incremental sales of A, and let MB be the profit margin that (for simplicity) either firm would earn on sales of B once introduced. Firm 2's profit from introducing B and selling Q units exceeds its cost, C2, of product introduction if MB.Q ≥ C2. But, if the firms have merged and no other entry is imminent, the merged firm will find it profitable to introduce B only if [MB – d.MA]Q ≥ CM, where CM is the merged firm's cost of product introduction. If d.MA is not much less than MB; then the merged firm may well find the introduction much less profitable than would an independent Firm 2, even if the merged firm's cost of introduction is considerably lower. This example illustrates how a merger can dramatically affect the incentives to introduce an

[203] Shelanski, H., "Information, innovation, and competition policy for the internet." *University of Pennsylvania Law Review* 161 (2013): 1663-1705 *available at* http://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1025&context=penn_law_review at 1703.

> innovative product—what we might call downward innovation pressure (DIP).

Farrell and Shapiro, on the other hand, have developed a measure known as *Upward Price Pressure* ("***UPP***") to analyze and handle this issue.[204] The UPP method is referred to in the US Horizontal Merger Guidelines,[205] and it is also one of the most well-known and widely used indicators employed by competition enforcement authorities to evaluate the unilateral price effects of horizontal mergers,[206] Farrell and Shapiro illustrate how the UPP method can be generalized to non-price dimensions of competition, such as product selection, product variety, and innovation competition. The authors state that the direction of the effects of a merger depends upon the relative strength of cannibalization effects and merger-specific efficiencies.[207]

However, they also declare that the impact of a merger on pricing incentives might not match up very closely with its impact on innovation incentives. For example, the two merging undertakings might not currently offer directly competing products in the relevant market, but they could both be working on and developing new products that will compete more directly in the future, either with each other or with the firms' current offerings.

At this point, Farrell and Shapiro introduce the concept of '*innovation diversion ratio*' as the key parameter of their analytical framework. According to their definition, the innovation diversion ratio of Firm A from Firm B is the fraction $\mathbf{I_{AB}}$ of the extra gross profits earned by Firm A when it devotes more resources to innovation that come at the expense of Firm B. For example, "*Firm A is considering a risky R&D investment that, if it succeeds, will yield $100 million in profits for Firm A and reduce Firm B's*

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[204] In an oligopoly where players *i* and *j* are Bertrand price-setting firms with two single-product, suppose $\overline{P_i}$ and $\overline{C_i}$ are the pre-merger price and marginal cost of firm "i". When firm i merges with firm *j*, the marginal cost of *i* decreases to $C_i = (1 - E_i\overline{C_i})$ post-merger. E_i stands for the efficiency gains in percentage. The merger will cause an Upward Price Pressure (UPP) for firm *i*, if $D_{ij}\overline{M_j}\frac{\overline{P_j}}{\overline{P_i}} > E_i(1 - \overline{M_i})$, where $\overline{M_i} = \frac{\overline{P_i} - \overline{C_i}}{\overline{P_i}}$ is the margin for product *i*.(*See* Farrell, J. & Shapiro C., (2010) "Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition", *The B.E. Journal of Theoretical Economics Policies and Perspectives*, 10 1 Article 9, *available at*: https://faculty.haas.berkeley.edu/shapiro/alternative.pdf at 12.

[205] Horizontal Merger Guidelines, at 21.

[206] Farrell, J. & Shapiro C., "Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition." *The B. E. Journal of Theoretical Economics Policies and Perspectives* 10 1 Article 9 (2010) *available at* https://faculty.haas.berkeley.edu/shapiro/alternative.pdf at 33.

[207] *Id*. at 33.

profits by $30 million. Since 30% of the extra profits to Firm A come at the expense of Firm B, I_{AB} is 30%."[208] The authors provide the following simple example to explain the unilateral innovation effects: In an oligopoly where firms A and B are Bertrand price-setting firms with two single products, if the merger between A and B yields R&D efficiencies such that the cost of R&D falls by a factor (1− E_R), this merger will tend to retard innovation on Firm A's products **if $I_{AB} > E_R$**. Thus, we observe that the impact of the proposed merger on innovation incentives does depend on the extent to which Firm A's pre-merger rewards from innovation come at the expense of Firm B, and on merger efficiencies relating to innovation. On the other hand, the authors also note that it may not be easy to estimate the actual *innovation diversion ratio* in any given case.

Federico, Langus, and Valletti have also analyzed the effects of horizontal mergers on innovation with the help of a theoretical two-stage game model. By using this model, they found that the negative impact of the cannibalization effect on innovation incentives dominates any other innovation effect, and will generally reduce the post-merger firm's innovation efforts.[209] In this regard, Jullien and Lefouili report that[210] Federico, Langus and Valletti, who are employed as economists at the Chief Economist Team at the European Competition Commission, have formalized the arguments that the Commission had used in the *Dow/DuPont* case, in their papers.[211] These economists set up a highly stylized model of a merger in an industry where innovation plays a vital role, incorporating the two main channels for merger-induced innovation effects: (i) internalization of the negative externality of innovation that the merging parties impose on each other, and (ii) product-market channel. That type of model provides some essential insights on the likely net effect of merger's innovation and consumer welfare.

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[208] Farrell, J. & Shapiro C., "Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition." *The B. E. Journal of Theoretical Economics Policies and Perspectives* 10 1 Article 9 (2010) *available at* https://faculty.haas.berkeley.edu/shapiro/alternative.pdf.

[209] Federico, G., Langus G., Valetti T., A SIMPLE MODEL OF MERGERS AND INNOVATION (CESifo Working Paper No. 6539, June 2017) *available at* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3005163 .

[210] Jullien, B., & Lefouli, Y., HORIZONTAL MERGERS AND INNOVATION (Toulouse School of Economics, Working Papers No. 18-892, 2018) 3 *available at* https://www.tse-fr.eu/sites/default/files/TSE/documents/doc/wp/2018/wp_tse_892.pdf .

[211] Federico, G., Langus G., Valetti T., A SIMPLE MODEL OF MERGERS AND INNOVATION (CESifo Working Paper No. 6539, June 2017) *available at* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3005163 .; *See also* Federico, G., Langus, G. and Valletti T., "Horizontal Mergers and Product Innovation." *International Journal of Industrial Organization* 59 (Jul. 2018):1-23 *available at* https://www.researchgate.net/publication/318392882_Horizontal_Mergers_and_Product_Innovation .

In their 2017 paper, Federico, Langus, and Valletti assume that the firms in their model do not make any profits in the absence of innovation. This assumption implies that innovation does not actually cannibalize any pre-existing profits and that the product-market competition channel can only serve to promote and enhance innovation. The authors further assume that there are no merger-induced efficiencies and that the effects on innovation are based solely on changes to the competition between the merging parties. Finally, their model focuses on the case of stochastic product innovation (as opposed to process innovation), which means that research is assumed to be an uncertain activity and that the number of labs that succeed in finding a treatment is random.

In the first stage of the game, the firms engage in some costly R&D efforts, which determine the probability of discovering/inventing a new homogenous product (*i.e.,* successful innovation).[212] In the second stage, the firms observe the outcome of the first stage and receive their payoffs. In this sense, their model is an illustration of the *innovation diversion effect* in merger analysis. In their 2017 paper, the authors consider N (identical) research labs that compete to invent a product to serve a new market, *e.g.*, pharmaceutical labs trying to develop a new treatment for a disease. When several new products made available to consumers in the market, and competition erodes the firms' profits. The innovations of the undertakings divert each other's sales. In this model, the authors assume that competition between three or more products erodes all profits. Therefore, an investor can expect to gain profits only if it is the sole successful inventor in the relevant market or if there is only one other successful inventor.[213]

Federico, Langus, and Valletti then analyze the effects of a merger between two research labs. In this scenario, they assume that the two research units remain separate, but the merged entity coordinates the research efforts exerted in each research lab. If the merged entity continues to invest (the same amount) in R&D activities at both research units, the authors conclude that a merged entity controlling

[212] Federico, G., Langus, G. & Valletti T., "Horizontal Mergers and Product Innovation." *International Journal of Industrial Organization* 59 (Jul. 2018):2-3 *available at* https://www.researchgate.net/publication/318392882_Horizontal_Mergers_and_Product_Innovation .
[213] Jullien, B., & Lefouli, Y., HORIZONTAL MERGERS AND INNOVATION (Toulouse School of Economics, Working Papers No. 18-892, (2018) 11 *available at* https://www.tse-fr.eu/sites/default/files/TSE/documents/doc/wp/2018/wp_tse_892.pdf .

both research labs would invest less in R&D than two independent research labs. The fundamental idea behind their argument is that, when determining its investment level in one research lab, the merged entity discounts the fact that a successful innovation at that lab would divert (*i.e.,* cannibalize) sales from the product(s) discovered by the other research lab, if both labs succeeded simultaneously at their research efforts. Thus, the authors claim that the merged entity would then decide to invest less in R&D because it internalizes the sales externality. They also contend that, for concentrated industries, the reaction of non-merging firms regarding R&D will not be sufficient to offset the reduction of innovation by the merging firms.[214]

The same authors have chosen to examine the innovation effects of horizontal mergers in another paper (published in 2018), by considering the interaction of two separate and competitive channels: (i) the channel of price coordination, and (ii) the channel of innovation externality.[215]

Price coordination relates to the elimination of price competition between the merging firms. The authors admit that the effect of price coordination on innovation incentives remains ambiguous. Moreover, they state that, if the merger increases pre-innovation profits in the product-market to a greater extent than it increases post-innovation profits, then price coordination will introduce a downward pressure on the merging firms' incentive to innovate. If the converse is true, price coordination will exert upward pressure on the merged entity's incentive to innovate. Which of the two directions will prevail would be determined depending on the specific assumptions made on the nature of the competition. According to the model put forth by the authors, the reduction in the intensity of price competition following a merger tends to favor and enhance innovation.

The authors above believe that innovative activities by one party cause a reduction in profit to the second party—whether or not the latter has innovated—the first merging firm must divert profitable post-innovation sales to the other party. However, if the second party to the merger has not innovated, then innovation by the first

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[214] *Id*. at 11-12.
[215] Federico, G., Langus, G. & Valletti T., "Horizontal Mergers and Product Innovation." *International Journal of Industrial Organization* 59 (Jul. 2018):1-23 *available at* https://www.researchgate.net/publication/318392882_Horizontal_Mergers_and_Product_Innovation .

merging firm cannibalizes the pre-innovation sales. Ultimately, the merged firm internalizes the negative externality caused by the innovation effort. In the model set forth by Federico, Langus, and Valletti (2018), a merger, therefore, exerts downward pressure on the innovation incentives of the merging firms via the innovation externality channel.[216]

The authors analyze the interaction of the price coordination and innovation externality channels in the context of a merger, by considering symmetric oligopoly where firms invest in improving the quality of their products and assume that an innovation replaces an old product with a new, better (*i.e.,* higher quality) product. The authors then examine the effects of a merger between two firms on the incentives to innovate, assuming away any spillover effects or efficiencies. For this purpose, they separate the impact of a merger into two terms: one term summing up the consequences of unilateral effects in prices on innovation, and another one measuring the innovation diversion effect. The authors do not attempt to solve the model analytically, but rather discuss the effects at work and perform some numerical simulations. As a result, they reach two conclusions:

a) Their simulations indicate that there are conflicting effects in the models they consider: the effect of the merger on the pre- and post-innovation price equilibrium increases the incentives to innovate, while the innovation diversion effect reduces these incentives.
b) In their simulations, the innovation externality channel overcomes the countervailing effect of the price coordination channel. The innovation diversion effect dominates so that the overall impact of a merger on the merging firms' innovation efforts is **negative**, and so is the ultimate effect of the merger on consumers.

Therefore, the authors determine that the innovation effort of the merging parties decreases following the merger. Moreover, the negative effect on innovation incentives tends to be more pronounced when the merging parties are close competitors. The non-merging firms increase their innovation efforts following a

[216] *Id*. at 2.

merger, but this increase does not compensate for the reduction of innovation efforts by the merging firms, which implies that the total amount of innovation in the relevant market falls after the merger. Thus, the authors find that the merger has a welfare-reducing effect on consumers. [217]

Federico, Langus, and Valletti also consider the innovation-related efficiencies that a merger may bring forth, including reductions in R&D costs and merger-specific enhancements in the effectiveness of innovation. They do not, however, proceed to model involuntary knowledge spillovers. The authors admit that both the findings on innovation incentives and consumer welfare can be overturned and invalidated if there are sufficiently large R&D efficiencies.[218]

The researcher believes that both studies conducted by Federico, Langus and Valletti were based on innovation at the '*product*' level. Motta and Tarantino,[219] on the other hand, focus on the effects of mergers on '*process*' innovation (which reduces the cost of production) in their baseline model. They also analyze the effects of a merger on quality-improving innovations in an extension of their model.

In their analysis, Motta and Tarantino assume that firms set both cost-reducing investment levels and prices, simultaneously. Therefore, investment decisions are presumed to be unobservable. Pre-merger firms sell one differentiated product and the merger creates a new multi-product firm that offers two product varieties. In this way, the merger breaks the symmetry in the industry. Subsequently, the authors demonstrate that, under no (or weak enough) efficiency savings, a merger will reduce aggregate investments and harm consumers. This net effect will be the result of the decrease in investments and rise in prices on the part of the merging parties (*i.e.,* insiders), and the increase in investments, with prices that may either increase or decrease, on the part of the non-merging parties (*i.e.,* outsiders).[220]

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[217] *Id*. at 14.
[218] *Id*. at 2.
[219] Motta, M. & Tarantino, E., THE EFFECT OF HORIZONTAL MERGERS, WHEN FIRMS COMPETE IN PRICES AND INVESTMENTS (University of Mannheim, Department of Economics, Working Paper No. 17-01, September 2017) *available at* https://ub-madoc.bib.uni-mannheim.de/42805/1/17-01_Motta%2C%20Tarantino.pdf .
[220] *Id*. at 2.

The authors find that the merger will have pro-competitive effects only if the merger-driven cost savings in investments are sufficiently high. Under weak or no efficiency gains, the authors suggest that the merger will always result in the insiders raising their prices and reducing their investments, because the merged entity internalizes that a price decrease for one of its products will reduce the consumer demand for the other product it sells, and this dynamic leads to an upward pressure in prices compared to the pre-merger case. In turn, higher prices will lead to lower quantities of the product being sold by the insiders, and to lower marginal revenues from investing for the insiders, the insiders' investments will be reduced.[221]

In the standard models of mergers concerning price-setting firms, without considering investments, outsiders' prices will also increase due to strategic complementarity. However, this is not always the case in Motta and Tarantino's model. According to their model, when the insiders increase their prices, prices of the outsiders increase, too. The outsiders however use lower prices and therefore, demand and market shares tend to rise, ultimately will increase their (cost-reducing) investment levels. The authors demonstrate that, at equilibrium, depending on the particular assumptions made about the type of demand function, the prices of outsiders may either increase or decrease.[222]

Motta and Tarantino admit that the net effects of a merger are not apparent *a priori*, since a merger may have different effects on insiders' and outsiders' prices and investments, and since undertakings sell differentiated products. In an alternative model, the authors assume that each firm chooses to determine either price or investment. They analyze the outcome of this model using an aggregative game theory formulation, where the payoff received by a player depends on its own actions and an additively separable aggregate of all the players' actions.[223]

With this alternative modeling, the authors can show that—absent efficiency gains—the merger hurts consumer surplus. Moreover, this result holds for classes of demand functions, such as the Constant Elasticity of Substitution ("*CES*") demand, the logit demand, and for the standard parametric product differentiation models—

[221] *Id*.
[222] *Id*.
[223] *Id*.

such as the Shubik-Levitan model, and the Salop circle models. The authors demonstrate that the merger will be pro-competitive and boost investments if it allows and enables the firms to benefit from strong enough efficiency gains in terms of R&D.[224]

Motta and Tarantino also extend their analysis in several new directions, by considering the scenario in which the firms in the relevant market offer asymmetric goods. As a result, a merger between any two firms will reduce consumer welfare because they identify sufficient conditions for the merger to reduce aggregate investments.[225]

The authors also analyze the effects of a merger in which the firms undertake quality-enhancing investments. Within a general model, the results of this assumption are *a priori* ambiguous: on the one hand, the merger will raise prices and this, in turn, will increase the marginal profitability of investments; on the other hand, the merged entity will internalize the fact that increasing the quality of one product reduces the attractiveness (and profits) of its other product, and this will reduce its incentives to invest. However, Motta and Tarantino illustrate that the merger harms consumers under some broad classes of models with quality-enhancing investments (*e.g.,* vertical product differentiation models).[226]

Motta and Tarantino have also modified the '*simultaneous game*' assumption, and they have analyzed the case of a *sequential game*, where the firms invest first, all observe their choice, and they then choose prices. They have concluded that the presence of strategic effects makes it difficult to establish propositions of general validity about the effects of a merger in this scenario. The authors also note that an aggregative game theory formulation for the sequential game is not possible. Nonetheless, the analysis of parametric models confirms the qualitative results that were reached for the *simultaneous moves* case: (i) the merger harms consumers, (ii) it increases the prices and decreases the investments of the insiders, (iii) it increases the investments of the outsiders, and (iv) it may either decrease or increase the prices of the outsiders.

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[224] *Id*. at 3.
[225] *Id*.
[226] *Id*.

4.4.2 Contestability

According to Shapiro, one of the three fundamental principles that should be taken into account in assessing the effects of mergers on innovation is *contestability.* Contestability refers to the situation in which rivals can challenge the incumbent position(s) in a particular market. For innovation to flourish, the market needs to remain contestable. Shapiro explains this principle briefly as follows: "*The prospect of gaining or protecting profitable sales by providing greater value to customers spurs innovation*."[227]

The contestability principle focuses on the extent to which a firm can take away profitable sales from its rivals by offering greater value to the customers. Sales are characterized as *contestable* if profitable sales shift towards the successful innovator, depending on the nature of ex-post product-market competition.

If market shares are sticky, for example, because consumers have strong brand preferences or face high switching costs, relatively few sales will be contestable, and innovation incentives will be muted. If customers are tied to their existing suppliers, relatively few customers will be able to switch to the new product. In such a case, a limited amount of the sales will be contestable, and a company's incentive to innovate will be lower than in a market where customers can switch products often, and market shares are not sticky.[228]

According to Shapiro, the Arrow effect fits well with the contestability principle: for a given level of ex-post sales, a firm with scant ex-ante sales has more to gain from innovation. To put it differently, a firm that will make substantial sales even if it does not innovate (such as Arrow's incumbent monopolist who faces no competitive threat) and thus has muted/lower incentives to innovate.[229]

Shapiro argues that the Schumpeter effect also fits well with the contestability principle: companies generating major innovations are often rewarded with large market shares, leading to high ex-post market concentration. Conversely, a small

[227] Shapiro, (2012) *supra note* 129 at 364.
[228] *Id*.
[229] *Id*.

firm that will not be able to grow much, even if it successfully innovates, has lower incentives to invest in R&D than a larger firm.[230]

The Commission agrees with Shapiro, in that it considers contestability to be in line with both Schumpeter's and Arrow's theories. The Commission expresses the view that Arrow and Schumpeter both accept and recognize that markets need to remain contestable for innovation to flourish.[231]

4.4.3 Product-market Rivalry

Aghion *et al* had shown that innovation efforts depend on the particular structure of the product-market and that the rate of patent development increases with competition up until a certain point, after which it starts to decrease (*i.e.,* exhibiting an inverted-U-shaped relationship).[232] However, Federico, Langus and Valletti argue that the inverted-U relationship between innovation and some measure of competition does not have an immediate counterpart in a merger setting, at least insofar as the innovation output of the merged firm is concerned.[233]

According to Federico *et al*, one of the channels through which horizontal mergers affect the incentive to innovate is the *product-market competition channel*. They state that, through the product-market competition channel, a merger internalizes the negative price externality, which leads to an ambiguous result regarding innovation: lower price competition increases the profits of the merging parties, whether or not they innovate. Moreover, a price increase in the post-innovation period reduces the benefit that the consumers receive. The effect of the *innovation competition* channel (where a merger internalizes the negative innovation externality),[234] combined with

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[230] *Id*.
[231] European Commission (2016) Competition Policy Brief EU Merger Control And Innovation, *available at* http://ec.europa.eu/competition/publications/cpb/2016/2016_001_en.pdf at 2.
[232] AGHION, P. & GRIFFITH, R., COMPETITION AND GROWTH: RECONCILING THEORY AND EVIDENCE. CAMBRIDGE, MA: MIT PRESS 701-728 (2005).
[233] Federico, G., Langus G., Valetti T., A SIMPLE MODEL OF MERGERS AND INNOVATION (CESifo Working Paper No. 6539, June 2017) *available at* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3005163 at 8.
[234] This refers to the negative effect that innovation by one of the merging parties may have on the profits of the other merging party.

the *product-market* channel, could result in a reduction in innovation efforts and an increase in post-innovation prices.[235]

4.4.4 Appropriability

According to Shapiro, appropriability is one of the factors that should be taken into account as an essential determinant of post-merger incentives to invest. Appropriability refers to the ability of an innovator to benefit from its investments. It is "*the extent to which a firm can capture the value created by its innovation and protect the competitive advantage associated with it*."[236]

Shapiro contends that increased appropriability increases the incentive to innovate.[237] Intellectual property rights (such as patents) can offer adequate protection for innovations. If competitors can easily imitate or 'patent around' an invention, the successful innovator will not be able to differentiate his products or maintain cost advantages, and he will not be able to increase his profit margins through innovation. Therefore, the incentive of such a firm to innovate will be minimal. If imitation occurs quickly, an innovator can hardly offer more value to the customers than his rivals, and the principle of contestability, as discussed above, loses its importance and becomes insignificant.[238][239]

A firm that can appropriate the benefits of its innovations will have stronger incentives to invest in the first place, than a firm whose innovations can be rapidly copied and reproduced.[240] Appropriability can be a factor that balances the negative effects of a merger on innovation caused by the internalization of the cannibalization effect.[241][242]

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[235] Federico, G., "Horizontal Mergers, Innovation and the Competitive Process." *Journal of European Competition Law & Practice* 8 10 1 (Dec. 2017): 668 -677.
[236] European Commission (2016) Competition Policy Brief EU Merger Control And Innovation, *available at* http://ec.europa.eu/competition/publications/cpb/2016/2016_001_en.pdf at 1.
[237] Shapiro, (2012) *supra note* 129 at 364.
[238] *Id*.
[239] Seiler, (2018) *supra* note 132 at 6.
[240] Oxera, *Supra note 127*.
[241] RBB Economics (2017) *supra note* 166 at 1.
[242] Shapiro explains this principle succinctly as "*Increased appropriability spurs innovation*." *See* Shapiro (2012) *supra note* 129 at 364.

The degree of appropriability depends on the effectiveness of IP rights, and on whether rival firms are innovating (or are perceived to be innovating) in the same area.[243] If a firm that plans to invest in the development of a new product faces a risk that numerous rivals may also invest in developing new competing products and which can take sales away from it, then the firm may be discouraged from investing in the development of the product in question. As the number of potential rival innovators increases, the expected returns that a firm can hope to obtain from its R&D investment decreases, and it may reach the point where the firm may choose to refrain from investing in the project in the first place.[244]

According to Shapiro, the Schumpeter effect fits well with the appropriability principle: one cannot expect substantial innovative efforts from undertakings if rapid imitation causes ex-post competition to be so severe in the relevant market that even a successful innovator earns little in profits.[245] However, Seiler has pointed out that, when appropriability is already high (for instance, because of strong IP rights for product innovations), a merger does not further increase the incentive to innovate.[246]

Baker, Shapiro, Gilbert and Greene have all posited in their studies that a merger between two out of a few rival innovators is likely to reduce product innovation incentives in the relevant market if: (i) pre-merger appropriability is high (resulting from the fact that innovators acquire an effective exclusive right to their innovation, with limited knowledge spillovers), and (ii) there are no merger-related efficiencies.[247] Similarly, the results of Arrow, as well as Greenstein and Ramey, suggest that a secure product-market monopolist has fewer incentives to innovate than a firm facing product-market competition.[248]

In this regard, Gilbert concludes that, for process innovations that reduce marginal production costs, innovation incentives are lower for a monopoly that is protected from both product and R&D competition than for a competitive firm, provided that the

[243] RBB Economics (2017) *supra note* 166, at 2.
[244] *Id*.
[245] Shapiro, (2012) *supra note* 129
[246] Seiler (2018) *supra* note 132 at 17.
[247] Federico, G., Langus, G. and Valletti T., "Horizontal Mergers and Product Innovation." *International Journal of Industrial Organization* 59 (Jul. 2018):1-23 *available at* https://www.researchgate.net/publication/318392882_Horizontal_Mergers_and_Product_Innovation at 3.
[248] *Id*.

innovator maintains exclusive rights to the innovation. However, it is worth noting that allowing for competition in R&D can reverse this effect. With non-exclusive intellectual property rights, competition can lower incentives to invest in process R&D by reducing each firm's output, and hence, its return from attaining lower costs. Incentives are more complicated for new products because profits depend on a firm's product portfolio, and even competitive firms are likely to earn profits if they offer and supply differentiated products to their customers. Nonetheless, the results for product innovations are similar to the results for process innovations, if the new product is sufficiently attractive to make the existing products obsolete.[249]

In the *Dow/DuPont* merger, although the Commission did acknowledge that appropriability was a factor that could positively affect post-merger incentives to innovate, it did not find it necessary to engage in a balancing exercise between the cannibalization and appropriability effects. Instead, the Commission primarily relied on the theoretical economics papers, claiming that these provided a rational basis and support for the conclusion that cannibalization is inherently likely to outweigh appropriability, and that horizontal mergers can, therefore, be expected to impact innovation incentives negatively.[250]

Although the Commission relies upon economic theories such as the above in its assessments, it is imperative that merger control is conducted on a case-by-case basis, especially where innovation-centric industries are concerned, where a one-size-fits -all method can hardly be deemed valid. This reinforces the need for flexibility of approach and analysis of the relevant effects for each particular case in concreto; which may merit a more lenient look to those mergers in dynamic sectors which can give rise to specific efficiencies.[251] Moreover, Regibeau *et al* argue that (assuming that the authorities will be correctly addressing the conventional, static competition issues of the transaction) the effect of a merger on innovation should also be assessed on the *additional factors* it gives rise to, not just the efficiencies that may arise due to economies of scale or scope, or the sharing of R&D

[249] Gilbert, *supra* note 126 at 204.
[250] RBB Economics (2017) *supra note* 166, at 2.
[251] Regibeau P. & Rockett K.E. "Mergers and Innovation" Vol. 64(1), The Antitrust Bulletin. 31 (2019).

resources.[252] They list these additional efficiency factors under (i) knowledge diffusion within the merged entity, (ii) spillovers (iii) appropriability, (iv) coordination of R&D investments, (v) sequential innovation, and (vi) legal certainty issues regarding IP rights.[253] Through these factors, as well as any significant overlaps in the merging parties` product lines, or the availability of licensing in the technology markets, the authors provide a "policy-algorithm" framework and flow charts for competition authorities to follow where innovation factors play a material role in the merger. Their policy algorithm demonstrates that while novel theories of harm are not sector specific, mergers with significant innovation dimension require extensive analysis by the relevant Authority, on a case by case basis.

V. Innovation Defences by Applicant Entities in Merger Control: A Survey on Existing Arguments

5.1 Incentives to innovate

The merger control regimes in both the EU and the US adopt a consumer welfare approach. It clearly defines the scope and the extent of innovation defenses that could be raised by the merging parties.

In the *Dow/DuPont* merger, the submissions of the merging parties to the Commission put forth the various innovation defenses which are currently in use.[254] The applicants presented various theoretical arguments to demonstrate that the *Dow/DuPont* merger could lead to higher incentives to innovate, even in the absence of efficiencies. On that note, the parties offered two economic submissions that identified six separate channels through which the merger could lead to higher incentives to innovate.[255] Having said this, the Commission pointed out within its decision that some of the arguments offered in the parties' submissions on why a

[252] *Id.*
[253] *Id* at 38.
[254] Some other cases discussing incentives to innovate are *Medtronic/Covidien* Case M.7326 (2014), *BMS/Celgene* Case M.9294 (2019), CMA, *Acquisition by Mastercard UK Holdco Limited of VocaLink Holdings* (2017), CMA, *BT Group plc and EE Limited* (2016) CMA, *Tobii Ab /Smartbox* (2019) FTC, *Danaher Corp*. FTC Dkt. C-4710 (2021).
[255] The European Commission has declared that they assume that all of theoretical arguments raised are, in principle, applicable to the transaction according to the two economic submissions.

merger could positively affect innovation incentives in general, had not been specific to the *Dow/DuPont* merger.[256]

According to the merging parties, the channels that could lead to higher incentives to innovate were as follows:[257]

1. Higher returns to R&D investment when firms compete in R&D: A reduction in the number of independent competitors in R&D may increase the return to R&D efforts, and thereby increase innovation.
2. Reduced uncertainty in R&D competition: The possible reduction of uncertainty in R&D competition as a result of the merger can also stimulate innovation.
3. Reduction of imitation: A merger may increase the rewards to innovation by lessening information spillovers to competing firms, and hence, reducing imitation.
4. Higher scale: A merger may increase the return to innovation by allowing the merged entity to attain higher sales, and hence, enable it to appropriate more of the value of innovation if this is proportional to sales.
5. Product complementarities: A merger may allow a firm to capture a greater value of its innovation by combining it with complementary products offered by the other merging party (and vice versa), in ways that had not been feasible prior to the merger.
6. Cost synergies: A merger may reduce the cost of R&D activities via merger-specific synergies, and therefore stimulate innovation.

In the *Dow/DuPont* case, the merging parties argued that only the "*cost synergies"* channel should be assessed as a merger-specific efficiency. According to the undertakings, the other alleged pro-innovation effects should be considered within the overall competitive assessment of the transaction.[258] Therefore, these arguments can be interpreted as possible defenses in a typical horizontal merger.

[256] *Dow/DuPont*, European Commission Case M.7932 – Annex 4 recital 25, fn7 (Mar. 27, 2017)
[257] *Dow/DuPont*, European Commission Case M.7932 – Annex 4 at recital 25.
[258] *Id.* at recitals 25, 26.

The Commission reported that both submissions of the merging parties in the *Dow/DuPont* case claimed that the well-known prediction of Arrow, that firms in a competitive market structure are likely to face stronger incentives to innovate than firms in a more concentrated market, is not always valid. According to the merging parties, Arrow's prediction may not hold if the parties compete in R&D, since, in this scenario, an incumbent firm may face stronger incentives to invest than a new entrant to the market. This stems from the fact that the incumbent may be investing in protecting its existing monopoly profits, while the latter would only be able to realize (lower) competitive profits after a successful innovation and its subsequent entry to the market. The economic submissions of the merging parties noted that Arrow's conclusion could be reversed in the case of an insecure monopolist, who is threatened by competition. In that case (assuming that innovation is deterministic), the vulnerable monopolist may face incentives to pre-empt entry in order to protect its existing market power.[259] The European Commission noted that this result relies on the Gilbert and Newbery study, discussed below.[260,261]

When analyzing the relationship between competition and innovation, Gilbert and Newbery developed a simple alternative model in which a potential entrant threatens the monopolist to the relevant market.[262] In this model, the monopolist possesses an old technology (or product) and considers investing in R&D activities to develop and introduce new technology. Gilbert and Newberry assume that if the monopolist innovates, then the potential entrant will not enter the relevant market. In other words, the entrant will only enter the market if it possesses new technology. Hence, there are two distinct scenarios: either the monopolist innovates and remains a monopolist in the relevant market, or the entrant innovates, and a duopoly emerges. In this context of firm level innovation, Arrow's prediction about the incentives to innovate will be reversed. In this model, the profit level of the monopolist using the old technology does not matter to the analysis, because the entrant will enter the market with the new technology if the monopolist does not innovate. Therefore, the monopolist will compare its ex-post monopoly profits after successful innovation, with

[259] *Id.* at recital 75.
[260] *Id.* at 72, 514-526.
[261] Gilbert, R. & Newbery D., "Preemptive Patenting And The Persistence Of Monopoly." *American Economic Review* 72 (1982): 514-526.
[262] *Id*.

its profits to be gained under the duopoly condition if it does not innovate. The monopolist may even consider adopting some sort of fast defensive measure in the meantime and create barriers to entry *e.g.* by way of pseudo-innovation mimicking the new technology, which could slow down new entrants and buy the monopolist time to assess the future of the market before investing.

On the other hand, the incentive of the entrant to innovate is measured simply by its duopoly profits. The monopolist's incentive to innovate will be at least as high as the entrant's incentive, as the ex-post monopoly profit will always be at least as large as the sum of both duopoly profits. Indeed, both incentives will only be equal if the old technology becomes obsolete. This model explains the *'efficiency effect'* and the '*competitive threat*' by others. A dominant firm has more to lose in profits if it is a competitor (rather than the monopolist) that innovates in the relevant market. Thus, it is clear that the underlying factor behind this effect is a competitive threat.[263] On the other hand, Jullien and Lefouili (2018) have asserted that the '*innovation diversion effect*,' which had been analyzed by Federico *et al* in a simple model of mergers, can be viewed as providing only one of the factors that should be considered when evaluating the innovation effects in merger assessments. They believe that it would be misleading to conclude that mergers are always likely to impede incentives to innovate (in the absence of efficiency gains) due to the innovation diversion effect.[264] An innovation that results in a product enhancement would divert sales from competing firms, whereas innovation of new products, which address different customers, may benefit the competing firms as it relaxes price competition.[265] Since the firm's innovation increases the demand for competitors' products, the innovation diversion effect would be positive. This would mean that merging firms would be

[263] Schulz (2007) *supra note* 135. Although most studies have focused on firm level innovation, the effect of mergers on industry level innovation was also brought into focus by the authorities, as described further below. Research on public companies have shown that innovation at industry or country level, although depending on the business environment and dynamism of the relevant sector, will have significant effect at the organisation level, through agglomeration benefits or spillover effects. *See* Zhang, Y., Hult, G.T.M., Ketchen, D.J., Clantone RJ "Effects of firm-, industry-, and country-level innovation on firm performance" Marketing Letters 31, 231–245 (2020) available at https://doi.org/10.1007/s11002-020-09530-y

[264] Jullien, B., & Lefouli, Y., HORIZONTAL MERGERS AND INNOVATION (Toulouse School of Economics, Working Papers No. 18-892, (2018) *available at* https://www.tse-fr.eu/sites/default/files/TSE/documents/doc/wp/2018/wp_tse_892.pdf at 12.

[265] *Id*, at 13.

more willing to invest in R&D to invent new products, compared to the situation without merger.[266]

Arrow's conclusion depends on the assumption that the competitive situation is modelled in the context of a homogenous commodity under perfect competition. In an oligopolistic market with product differentiation, Arrow's prediction would not hold in general, and the monopolist may have a higher incentive to innovate. If a monopolist could sell his old product and the new product simultaneously and use both products to divide its customers into different segments, then the monopolist may have a more significant incentive to innovate, considering that a firm under perfect competition could only gain a positive profit with the new product. In this context, Schulz reports that, Greenstein and Ramey provide an example in a vertically differentiated product context and that Gilbert offers an example in a horizontally differentiated product model.[267] Therefore, the conclusions from Arrow's analysis are not universally applicable.

According to the merging parties, an incumbent firm may also face stronger incentives to innovate than a competitive firm, if it can capture greater market value by combining the new product with its existing product. The European Commission observed that this claim relies on the study conducted by Chen and Schwartz.[268] The submissions of the merging parties also noted that Arrow's conclusion does not apply to non-drastic product innovations that allow a (secure) incumbent to horizontally differentiate its product offers to its customers, as Chen and Schwartz have shown in their work. In that case, the incumbent would be able to extract more value from a new product than a new entrant who faces (perfect) competition from the old product.[269]

By relying on the findings of the two articles, it appears that the merging parties in *Dow/DuPont* intended to argue that a merger that reduces product-market competition may nevertheless stimulate innovation, by either increasing the scope

[266] *Id* at 13.
[267] *Id* at 9.
[268] *Dow/DuPont*, European Commission Case M.7932 – 513-528 Annex 4 recital 25, fn7 (Mar. 27, 2017),.
[269] The Commission mentioned that this result depends on the nature of product differentiation, and does not apply in the case of vertical product differentiation. The authors also showed that a monopolist would have stronger incentives to introduce a high-quality product in comparison to a duopolist.

for price differentiation by incumbent firms (on the basis of the economic mechanism highlighted by Chen and Schwartz), and/or by strengthening the pre-emption incentives faced by incumbent firms (relying on the results of Gilbert and Newbery's study). However, the Commission rebuffed the submissions of the merging parties by asserting that these economic reports had failed to explain how exactly their results should have been interpreted and applied to the Commission's assessment of the case, and concluded that it would, therefore, be difficult for the Commission to assess the reports' arguments accurately.[270]

The merging parties in *Dow/DuPont* argued that, under certain conditions, a less competitive product-market structure might lead to an increase in innovation, generating an inverted-U relationship between product-market competition and innovation by each firm, as described in several studies in the economics literature.[271] They also put forth the following framework for the proper assessment of merger effects on innovation incentives: (i) the incentive to invest in R&D activities is driven by the difference between the expected profits if a firm invests in R&D and the profits that it can earn if it does not invest in R&D; (ii) competition reduces the profits that a firm can earn if it does not invest in R&D — in that sense, a merger, by reducing competition, decreases the incentive to invest in R&D; however, (iii) competition also reduces the profits that a firm can earn after it innovates — in that sense, a merger increases incentives to innovate.[272] The merging parties explained that, because (ii) and (iii) generate opposing effects, depending on the particular assumptions and facts of the case, a merger could ultimately either positively or negatively impact the innovation incentives in a post-merger market.

The merging parties' submission also referred to the work of Xavier Vives,[273] in order to support their defense argument that a reduction in product-market competition may stimulate innovation. In that regard, the merging parties presented a simple numerical example that demonstrated that a reduction in the number of firms active in the market (*e.g.,* as a result of a merger) could indeed lead to higher industrywide

[270] *D*ow/DuPont, European Commission Case M.7932 – 513-528 (Mar. 27, 2017),. recital 76.
[271] *Id.* Recital 82.
[272] *Id.* Recital 115.
[273] *Id. at* 419-469.

innovation in the framework supplied by Vives.[274] The Commission observed that the merging parties, depending on Vives's work, had argued that "*too much competition harms consumers by reducing the incentives for firms to engage in cost-reducing innovation*." In this context, it is essential to note that Vives examines process innovation by using several assumptions regarding the competition. For instance, he models a change in competition as a change in the number of firms active in the relevant market. However, the Commission objected to the use of Vives's results as a defense argument, because whilst Vives found that process innovation efforts *per firm* tended to decrease with the number of competing firms, he also concluded that total R&D intensity (for example, the amount of cost-reduction expenditures over total sales) typically increased with an increase in the number of firms.[275] The Commission asserted that the underlying reason for this finding was similar to the one from the patent-race literature: while the presence of fewer innovators in the market may make innovation efforts more attractive for each firm, the loss of an independent innovator typically reduces overall innovation. According to the Commission, Vives's results do not support the assertion advanced in the merging parties' submissions that an increase in competition can reduce innovation and harm consumers.[276]

In *Dow/DuPont*, the merging parties claimed that cannibalization considerations did not play a significant role in the investment decisions of crop-protection companies, due to two key market features: (i) biological resistance (*i.e.,* products become obsolete once the targeted pests mutate and develop a resistance to them), and (ii) regulation (*i.e.,* the fact that many pesticides have had their application restricted or banned outright as a result of tightened regulations about toxicity tolerance levels). Biological resistance and regulation considerations have limited the growth of future profits that could be expected to flow from existing products. Dow and DuPont provided evidence to show that the cannibalization effect was not a significant factor

[274] *Id.* Recital 57.
[275] Vives (2008) states that in the model with the restricted entry (which is more suitable for merger assessments): "*…it is still possible, and indeed likely, that increasing the number of firms increases R&D intensity (e.g., cost reduction expenditure over sales.*" (page 423). The paper also notes, in relation to models of differentiated pricing, that "*a usual measure of the firm's R&D intensity as well as the total R&D intensity is in fact increasing in [the number of firms] n in the examples.*" Vives, X. (2008) "Innovation and competitive pressure", *Journal of Industrial Economics*, 56(3), at 430.
[276] *Dow/DuPont*, European Commission Case M.7932 (Mar. 27, 2017)

in their business decisions since they had largely disregarded over time any effect that new products may have on sales of their existing products when launching new pesticides.[277]

Dow and DuPont also submitted specific evidence highlighting the importance of appropriability considerations in their investment decisions. For example, they showed that the perceived threat of rival innovation in the same product space was a key negative factor in considering the commercial prospects of new active ingredients.[278]

5.2 Synergies and Efficiency Gains

In competition law, efficiency is considered in two separate categories: (i) static efficiencies and (ii) dynamic efficiencies. Static efficiencies arise in the short term. Alternatively, dynamic efficiencies are seen as occurring in the more distant future. Furthermore, static efficiencies focus mostly on reductions in marginal costs that might arise from the merger, whereas dynamic efficiencies include (i) the diffusion of know-how, (ii) more efficient use of IP rights, and (iii) increased R&D activities and investment. Dynamic efficiencies might enable firms to improve their business performance potentially in a continuous manner, and they might provide a much more significant benefit than static efficiencies. For instance, mergers may encourage the development of new products or help to reduce costs by combining assets and expertise that are not easily transferred between separate companies. Moreover, a merger might also eliminate the duplication of R&D efforts or make it easier to obtain financing for R&D or investment projects. Furthermore, a merger could lead to an increase in investments and improve the existing infrastructure.[279]

According to Shapiro, one of the three principles that should be taken into account in assessing the effects of mergers on innovation is *synergies.* The '*synergies principle*' is about the extent to which combining complementary assets will produce incentives to increase innovation. In some cases, firms are not able to innovate in isolation, especially in industries where value is created by systems that incorporate multiple

[277] RBB Economics (2017) *supra note* 166, at 2.
[278] *Id*. at 3.
[279] Oxera, s*upra note* 127 at 3.

components and where alternative methods of cooperation are not viable (such as patent pools or joint R&D agreements). In these cases, a merger that leads to the combination of complementary assets can create synergies and thus spur innovation.[280] Shapiro has explained this principle succinctly as "*Combining complementary assets enhances innovation capabilities and thus spurs innovation*."[281]

The EU merger control regime recognizes and acknowledges that some mergers may result in synergies arising from innovation, which can offset the anti-competitive effects of the transaction.[282] There have been many cases in which the merging parties have offered arguments regarding the possible efficiency gains of the relevant transaction.[283] Efficiency gains are theoretically expected to balance the negative effects of mergers on innovation. On the other hand, in the merger enforcement regimes of the EU and the US, the standards required for accepting an efficiency defense are high. Competition enforcement authorities ask the merging parties to demonstrate that the relevant efficiency gain is *merger-specific* and also *quantifiable*.

Dynamic efficiencies can occur in the form of fixed-cost reductions, quality improvements, service improvements, or new product development. However, some of these dynamic efficiencies might emerge over a long period of time, and their occurrence may sometimes be perceived as speculative and not easily verifiable. Therefore, it may be difficult to predict or forecast their implications at the time of the proposed merger. Moreover, even if such efficiencies are quantified, it is often difficult to provide clear evidence that the benefits will be both merger-specific and passed on to consumers.[284] Finally, even if some positive benefits do occur, it is

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[280] *Id*. at 2.
[281] Shapiro, (2012) *supra note* 129 at 365.
[282] European Commission (2016) Competition Policy Brief EU Merger Control And Innovation 1*, available at* http://ec.europa.eu/competition/publications/cpb/2016/2016_001_en.pdf .
[283] More recently, there have been efficiency claims relating to investments in mobile telecommunication networks, which raise similar issues to innovation-related efficiency claims. For instance, in the mobile telecommunication mergers in Ireland and Germany, the Commission analysed whether the mergers would bring additional material benefits in terms of network coverage, speed, and quality. In both cases, it concluded that any improvements would be limited and could not outweigh the consumer harm and/or would be not merger-specific. *See Hutchison 3G UK/Telefónica Ireland*, European Commission Decision no Case M.6992 (May 28, 2014) § 7.10., and *Telefónica Deutschland/E-Plus*. European Commission Decision no. Case M.7018 (Jul. 2, 2014), § 6.9, and 6.10.
[284] Oxera, *Supra note* 127 at 3.

difficult to weigh the efficiencies against a potential price increase accurately.[285] All these restrictions, as discussed throughout this thesis, demonstrate that despite all their concerns voiced to protect it, the authorities have not wholly embraced innovation and they are still not comfortable with looking into the future and taking into account those potentialities where innovation could thrive.

The finding that mergers reduce innovation incentives in the theoretical models in the economics studies summarized above (*i.e.,* Federico, Langus, and Valletti, 2017 and 2018; Motta, and Tarantino, 2017), is based on the assumption that the merger in question does not generate any efficiency gains. Therefore, this finding could be reversed if the synergies resulting from a merger are taken into account. In Motta and Tarantino (2016),[286] the authors can illustrate that, under specific scenarios (where decisions on investment and prices are taken simultaneously, sequentially, or with quality enhancing investments), if the synergies in the form of economies of scope are substantial enough, the merging firms will increase their investments and that this effect may outweigh the detrimental effect on prices.[287] Moreover, they focus on involuntary spillovers which share similarities with efficiency gains, and note that similar to economies of scale, merger allows internalizing spillovers, and higher spillovers incentivise merging parties to invest further.[288] Having said that, the authors emphasize that the mergers' effects on firms' incentives to innovate will develop over time, typically years, as is the case for dynamic efficiencies.[289] This complicates the balance between short-term harms to consumer, with procuring the consumer welfare in the long-term.[290] On the other hand, their analysis still leaves room for other scenarios: according to Loertscher and Max, in a merger to monopoly, the impact of incentives for cost-reducing investment depends on buyer power and produces different results for the merging parties and its rivals.[291] In case of no buyer

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[285] *Id*.
[286] Massimo, M. & Tarantino, E., The Effect of a Merger on Investments (Centre for Economic Policy Research, Discussion Paper Series No. DP11550, 2016) available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2850392.
[287] *Id*, at 4.
[288] Massimo, M. & Tarantino, E., The Effect of Horizontal Mergers, When Firms Compete In Prices and Investments (University of Mannheim, Department of Economics, Working Paper No. 17-01, September 2017) available at https://ub-madoc.bib.uni-mannheim.de/42805/1/17-01_Motta%2C%20Tarantino.pdf at 3.
[289] Massimo, M. & Tarantino, E (2016) *supra Note* 286 at 29.
[290] *Id.*
[291] Loertscher, S., Marx, L. M., "Merger Review for Markets with Buyer Power" Journal of Political Economy, vol. 127, no. 6, (2019), available at https://people.duke.edu/~marx/bio/papers/BuyerPower.pdf at 2970.

power, merger will increase incentives of the merging parties but not impact the rivals. [292] In case of buyer power, merger will increase incentives of rivals but the case for merging parties is ambiguous and can either decrease or increase.[293] Loertscher and Max contradicts with Motta and Tarantino's model showing a merger will decrease merging parties incentives while increasing their rivals'.[294] There may also be additional efficiency factors, as well as the "hard to measure" efficiencies as discussed under Regibeau *et al`s* policy algorithm framework which may have significant role on specific merger cases and scenarios.[295]

5.3 Treatment of Demand-side Efficiencies

In the *Deutsche Boerse/NYSE* case, a discussion was raised as to whether demand-side efficiencies (where the claimed benefit accrues directly to the customer) should be treated differently than supply-side efficiencies (where the benefit accrues directly to the merging entities). The transaction parties argued that demand-side efficiencies, such as reduced collateral requirements, arise directly on the side of the customer, and thus, do not need to be "passed on" by the combined entity through price reductions (as is often the case for supply-side efficiencies). However, in its decision on *Deutsche Boerse/NYSE*, the Commission outlined that, even though consumers may directly save costs as a consequence of reduced collateral requirements, the merged entity could nevertheless raise prices and therefore "*claw back*" at least some part of the savings.[296]

The Commission's reasoning in this decision was based on a standard economic argument. If the value of goods for the consumers increases, it is typically rational for sellers to increase their price, since consumers will have a higher willingness to pay (more) for goods. Assuming that the economic models can predict the unilateral effects of mergers, the part of the benefits that resides with the customers after '*clawback'* is similar to the part of the supply-side benefits (such as cost savings of the merging firms) that would be expected to be passed on to the customers.

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[292] *Id.* at 2970.
[293] *Id.*
[294] *Id* at 2997.
[295] Regibeau P. & Rockett K.E. "Mergers and Innovation" Vol. 64(1), The Antitrust Bulletin. 31 (2019).
[296] Deutsche Börse/NYSE Euronext, European Commission Decision no COMP/M.6166 paras 1235-1242 (Feb. 1, 2012).

However, the General Court upheld the reasoning of the Commission regarding the potential clawback of demand-side efficiencies.[297] Also, it confirmed that, even if benefits arise directly for the benefit of consumers (such as the alleged benefits of reduced collateral requirements), the Commission is entitled to assess whether some of these benefits could be clawed back by the merged entity.[298]

5.4 Vertical Efficiencies

The *TomTom/Tele Atlas*[299] deal was a vertical merger between a leading producer of navigation systems and a digital maps developer. The Commission unconditionally cleared the merger in 2008 and partly recognized the efficiency claims of the merging parties in its decision,. This was important because this was the only case where the Commission acknowledged some of the efficiencies for being merger-specific, despite finding the quantification studies insufficient.[300]

Firstly, the Commission recognized and acknowledged that the removal of specific double mark-ups met the legal test for efficiencies. Secondly, the parties claimed that the merger would lead to substantial innovation efficiencies.[301] Accordingly, depending on an economic analysis provided by the merging parties, the Commission predicted that the merger would result in a decrease in the average prices for personal navigation devices, provided that the efficiency gains in the form of the elimination of double marginalization were taken into account. The Commission also accepted that the merger would create individual efficiency gains in the form of better cooperation regarding the use of TomTom's customer database in improving Tele Atlas's digital maps.[302] Therefore, in its decision, the Commission acknowledged innovation efficiencies that were at least partly merger-specific and beneficial to consumers.[303] Having said this, the Commission also found that the two

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[297] *Id* at paras 267-280.
[298] Buehler, B. & Federico G., "Recent developments in the assessment of efficiencies of mergers in the EU." *Competition Law & Policy Debate* 2 1 (2016): 64–75.
[299] TomTom/TeleAtlas, European Commission Decision no. Case M.4854 (May 14, 2008).
[300] De Coninck R., "Innovation in EU Merger Control: in need of a consistent framework." *Competition Law and Policy Debate* 2 3 (2016): 41-51
[301] European Commission (2016) Competition Policy Brief EU Merger Control And Innovation, *available at* http://ec.europa.eu/competition/publications/cpb/2016/2016_001_en.pdf at 7.
[302] Kalkan, E., "Role of the Economics in the EU's New Vertical Merger Policy: Thoughts on the Merger between Tomtom and Tele Atlas", Ekonomik Yaklaşım 2014, 25(91) 55-68, *at* https://www.ejmanager.com/mnstemps/94/94-1398808973.pdf?t=1561106271.
[303] European Commission (2016) Competition Policy Brief EU Merger Control And Innovation, *available at* http://ec.europa.eu/competition/publications/cpb/2016/2016_001_en.pdf at 1.

studies submitted by the parties to quantify these efficiencies were not particularly convincing.[304] At any rate, it was not necessary in this particular case to estimate precisely the magnitude of likely efficiencies, given the proposed transaction's lack of anticompetitive effects, irrespective of efficiencies.[305]

Similarly, in the *Western Digital Ireland/Vivity Technologies* case,[306] the transaction parties had also claimed that innovation efficiencies would arise in terms of higher and faster product development through the combination of the merging firms' R&D resources. However, the European Commission found that these claims were not verifiable, because no specific quantitative or other types of evidence had been put forward that would allow their credibility to be assessed and verified in the Commission's examination.[307]

All in all, we observe that, if the anti-competitive effects of a merger have been established, the EC Merger Regulation[308] also recognizes that efficiencies—including synergies arising from innovation—can offset the anticompetitive harm, provided that the efficiencies put forward by the merging parties are (i) beneficial for consumers, (ii) merger-specific, and (iii) verifiable.[309] Unfortunately, it is very challenging for the parties to demonstrate with verifiable results that future innovation potential shall be beneficial for the consumer in a given merger case, therefore they are almost always disregarded by the authorities for being speculative. Considering innovation`s crucial role in economic development, increase in GDP and consumer welfare, there are certainly strong arguments, such as the ones listed below, for the authorities to adopt a more flexible and welfare-based approach.

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[304] TomTom/TeleAtlas, European Commission Decision no. Case M.4854 recitals 244-250 (May 14, 2008).
[305] *Supra note* 303, at 7.
[306] Western Digital Ireland/Vivity Technologies, European Commission Decision no. Case M.6203 recitals 996-1007 (Nov. 23, 2011).
[307] *Supra note* 303, at 7.
[308] Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings (the EC Merger Regulation), Official Journal L 24, 29. 01. 2004, *available at* https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32004R0139 at 1-22.
[309] *Supra note* 303, at 3.

VI. Potential Arguments for Innovation Defences

In addition to the above there are certain other potential arguments which may be raised or employed in more cases by transaction entities against the competition authorities.

6.1 No Presumption Should Be Accepted About the Effects of Mergers on Innovation Incentives

Competition authorities may presume, that horizontal mergers can reduce innovation incentives as a result of a standard unilateral effect.

RBB Economics has argued that no such presumption is justified, except in cases of mergers to monopolies, and even then under certain parameter values.[310] The assessment of a merger's impact on R&D investments requires a complex balancing exercise involving several factors that affect the incentives to innovate, most notably *cannibalization* and *appropriability*. The fact that these factors exert opposing influences on incentives to innovate implies that one effect cannot be presumed to dominate the other.

Katz and Shelanski also suggest that, where innovation is at stake, there should not be a presumption about the harm imposed by mergers on innovation, and they recommend that merger reviews should be carried out on a more fact-intensive, case-by-case basis. In their view, the correct presumption would be that a merger's effects on innovation are neutral, except in the case of a merger to monopoly, where there would be a rebuttable presumption of harm.[311]

Jullien and Lefouili state that the academic literature on mergers and innovation does not support a presumption that mergers have a negative impact on innovation. They reach this conclusion by considering the existence of potential positive effects of mergers on innovation, even in the absence of spillovers and R&D

[310] RBB Economics (2017) *supra note* 166
[311] Katz, M. L. & Shelanski, H. A., *Merger Policy and Innovation: Must Enforcement Change to Account for Technological Change?* In Jaffe A. B., Lerner J, Stern S. (Ed.s) Innovation Policy and the Economy 1, at 1-85, 6 (2005).

complementarities.[312] Therefore, they suggest that competition enforcement authorities should adopt a neutral perspective when assessing the impact of a merger on innovation and that they should balance the various effects at work in a particular transaction. They also argue that various effects, such as the '*demand expansion*' effect, the '*margin expansion*' effect, and '*spillover*' effects should be part of the main competitive assessment carried out by competition authorities in assessing the effects of a merger on the incentives to innovate.[313]

With regards to the *Dow/DuPont* merger, Nicolas Petit has argued that it is not possible to apply the "*Significant Impediment of Effective Innovation Competition*" (SIEIC) model of unilateral effects in its current form to predict post-innovation competition to merger innovation effects.[314] Petit notes that in *Tetra Laval,*[315] the ECJ had laid down four conditions – namely accuracy, reliability, consistency and completeness – that must be satisfied by the Commission for the lawful use of economic models in merger assessments and indicates that the Commission had failed to achieve the required standard in *Dow/DuPont* for all four conditions.[316] First, with respect to the accuracy, Petit criticizes the Commission on not considering all factors that may be key to innovation incentives (e.g. regulatory pressure, biological resistance) but solely considering rivalry as the main source of innovation.[317] Regarding reliability, Petit notes, among others, that the argument that *dissipation of rivalry post-merger will always result in lower innovation and as a result, consumers will always be worse off* is not embedded in mainstream economic analysis.[318] Petit also notes several inconsistencies in the decision. For example, he notes that the even though the SIEIC model predicts a reduction in relation to R&D inputs, which mainly consists of R&D expenditure, the decision measured R&D outputs instead of measuring R&D inputs,[319] however R&D output produced may be affected by factors

[312] Jullien, B., & Lefouli, Y., HORIZONTAL MERGERS AND INNOVATION (Toulouse School of Economics, Working Papers No. 18-892, (2018) *available at* https://www.tse-fr.eu/sites/default/files/TSE/documents/doc/wp/2018/wp_tse_892.pdf at 26.
[313] *Id*.
[314] Petit, N. "Innovation Competition, Unilateral Effects and Merger Control Policy" *Mimeo*, (2018) 24-25 *available at* SSRN https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3113077.
[315] Commission v. Tetra Laval, European Court of Justice, Case C-12/03 P, ECR I-987 (2005).
[316] Petit, N. "Innovation Competition, Unilateral Effects and Merger Policy" 82 Antitrust Law Journal 873, 876-77 (2019), at 906.
[317] *Id.* at. 911-912. Petit also states that whilst the decision addresses how resistance and regulatory pressure are unlikely to affect the existing products, it does not provide any view on the effects on future products.
[318] *Id* at 913.
[319] *Id* at 914-915.

that may arise after the decision.[320] Finally, as for the completeness, Petit states that the Commission should have considered both supportive and unsupportive evidence but it completely ignored research stating that new agrochemicals continue to enter into the market and that regulation and resistance are key drivers of innovation, and statistics showing that the firms that are active in the market increased their R&D expenditure.[321] All in all, in Petit's view, the *Dow/Dupont* decision does not meet the four conditions set out in *Tetra Laval* so it does not exhaust the burden of persuasion,[322] and the discussion under Annex-4 of the decision was mainly to lend credence to the Commission's decision from an academic point.[323] (This is parallel to what Petit had argued even before the Commission had concluded its investigation on the Dow/Dupont merger: that the Commission's intervention seemed to be based on a novel theory of harm which he called "significant impediment to industry innovation" which did not comply with the standard of proof set out in the *Tetra Laval.*)[324] In this regard, Petit contends that "the dispositive value of Annex 4 of the *Dow/DuPont* decision is challenging to assess since it is not entirely clear to what extent the selected models influenced the Commission's decision to intervene in the merger."[325]

On the other hand, it should be pointed out that Lianos *et al* disagree with Petit's criticisms, stating that when determining the effect of the merger on the innovation incentives in the industry, the Commission is not necessarily required to define a specific "innovation market" on which the merger may have an impact. On this front, they refer to the Commission's Transfer of Technology Guidelines ("***Transfer Guidelines***")[326] and state that when providing the cases where competitive concerns

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[320] *Id.*
[321] *Id.* at 910, 916.
[322] This is a term used to explain the Commission's burden of proof in economic assessments. *See* Lianos, I & Genakos, C, (2013), Econometric evidence in EU competition law: an empirical and theoretical analysis, ch. 1, pp. 1-137 in: Handbook on European Competition Law, Edward Elgar Publishing, https://EconPapers.repec.org/RePEc:elg:eechap:15373_1 at 64,75.
[323] Petit, (2019) *supra note* 316 at 906.
[324] *See* Petit. N. "Significant Impediment to Industry Innovation: A Novel Theory of Harm in EU Merger Control?" SSRN Electronic Journal (2017). Available at: https://orbi.uliege.be/bitstream/2268/207345/1/SSRN-id2911597.pdf where the author contends that, under this theory, the Commission may prohibit a merger by stating that the merger restricts R&D incentives in the concerned industry as a whole, without proving harm in relation to specific product market/pipeline. According to Petit, the underlying presumption is that the removal of a "parallel path R&D" of the target itself calls for intervention, as it will diminish innovation in the industry. He points out that such an approach does not comply with the standard of proof set out in *Tetra Laval*, which requires a detailed market search on the effect on innovation incentive of the acquired firm and the market.
[325] Petit, *supra note* 316, at fn.156.
[326] European Commission, Guidelines on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements C 89/03 Official Journal of the European Union (2014).

may arise, the Transfer Guidelines did not require an analysis on the market shares and therefore, it was not tethered to a specific product market as long as there exists "*at least four independent technologies that may constitute a commercially viable alternative, in addition to the licensed technology controlled by the parties to the agreement*."[327] According to them, this shows that the Commission's main concern is whether there are sufficient number of independent technologies that may constitute competitive alternatives. They remark that competition law should not only concern itself with high market shares but also with firms that use different technologies which may challenge those used by the incumbent, hence the Commission should not limit its innovation competition assessment to the delineation of an innovation market.[328] Accordingly, they assert that the Commission is entitled to assess innovation incentives in the industry without necessarily defining a specific "innovation market."

Denicolo and Polo have asserted that competition agencies and the courts should keep in mind that the effects of mergers on innovation can be either negative or positive and that they are more likely to be favorable for mergers that pass the traditional static tests. A presumption that horizontal mergers always hamper innovation, risks prohibiting many pro-competitive mergers. According to Denicolo and Polo, if any presumption is to be adopted, it must be that mergers are *innovation neutral*. A neutral starting point guarantees that arbitrary *a priori* beliefs do not bias the assessment of the impact of mergers on innovation and that it can be open-minded and grounded on the facts of each specific case.[329]

6.2 Market Definition and Innovation Spaces

Katz and Shelanski recommend that antitrust authorities reduce their reliance on defining bright-line (but often illusory) market boundaries and instead focus more on

[327] Lianos, I., Korah V., Siciliani, P., (2019) Competition law: Analysis, Cases & Materials Oxford University Press, p 1516. In the Guidelines, it is stated that where there exist four commercially viable alternatives, it is unlikely that Article 101 of the TFEU will be infringed, outside the areas of hardcore restrictions. *See* European Commission, (2011) Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements C 11/1 para 157.
[328] *Id.*
[329] Denicolò, V. & Polo M., "The Innovation Theory of Harm: An Appraisal" (2018), *available at* SSRN https://ssrn.com/abstract=3146731 at p. 27-28.

direct evidence of the likely effects of a transaction on price competition and innovation.[330]

6.3 Cannibalization Effects Should Be Balanced by Other Effects

The role of the '*cannibalization effect*' in assessing the impact of mergers on innovation is similar to the standard unilateral price effects in a horizontal merger. It is argued, however, that cannibalization captures only part of the competitive assessment of the likely impact on competition of a horizontal merger with regards to the incentive to innovate. Other effects can balance the negative impact of the internalization of cannibalization. According to RBB Economics, for example, a reduction in the number of competitors in an industry can also have positive influences on the firms' incentives to invest in R&D. Indeed, *appropriation* is one of these alternative effects. RBB Economics argues that the cannibalization effect will only be strong enough to reduce overall innovation in the case of a merger to monopoly.[331]

According to Shelanski, in order to minimize the cannibalization effect, the merged firm could, in some cases, coordinate the introduction of new products to the market alongside the established product lines of the pre-merger firms. For example, a firm's new and existing products could be repositioned in the relevant market to minimize any potential sales cannibalization between them. This could allow a post-merger firm to protect its profit margins in a manner that would not have been possible prior to the merger.[332] Thus, a firm's innovation incentives would be preserved, while the overall impact on consumer welfare would depend on the effects of the product repositioning.

In addition to arguing against the presumption that mergers impede the incentive to innovate (in the absence of efficiency gains) due to the innovation diversion effect, Jullien and Lefouili have introduced the '*demand expansion effect*' into the analysis

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[330] Katz, M.L & Shelanski, H. A., "Mergers and Innovation" *Antitrust Law Journal* 74 1 (2007): 1-85 at 6.
[331] RBB Economics, (2017) *supra note* 166, at 2
[332] Shelanski, H., "Information, innovation, and competition policy for the internet." *University of Pennsylvania Law Review* 161 (2013): 1663-1705 1703 *available at* http://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1025&context=penn_law_review .

of the innovation effects of mergers.[333] According to their study, increased prices in the post-merger market enhance the incentives to invest in innovation for next-generation products, and increased margins enhance the incentives to invest in innovation and to boost demand by offering a wider variety of differentiated products to the consumers. As a result, the positive effects on innovation may be stronger than the negative effects of the internalization of each other's profit reductions when the merging parties can differentiate their products and increase demand in the post-merger market. Thus a merger can still be beneficial to innovation, if the innovators are able to expand demand for their rivals through uninternalized positive externalities and spillovers.[334] The authors conclude by recommending that competition enforcement authorities adopt a neutral perspective when assessing the effects of mergers on innovation. Furthermore, they suggest that all merger effects, including positive spillover effects for future innovations and other efficiencies, should be incorporated into the central part of the competitive assessment by the Commission, and that the Commission should consider the theory of benefits together with the theory of harm.[335]

At this time, most of the innovation in the digital economy (as well as some of the non-digital industries) is conducted in ecosystems which have a continuous cycle and balance within, akin to the more widely recognized system of ecology.[336] The fast progression of innovation inevitably creates management issues in case of strong substitution relations between the interchangeable products of the same undertaking, rather than with its competitors (*i.e.,* cannibalization) and requires

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[333] Jullien, B., & Lefouli, Y., HORIZONTAL MERGERS AND INNOVATION (Toulouse School of Economics, Working Papers No. 18-892, (2018) *available at* https://www.tse-fr.eu/sites/default/files/TSE/documents/doc/wp/2018/wp_tse_892.pdf at 21.

[334] Kokkoris I. & Valletti T, "Innovation Considerations in Horizontal Merger Control" *Journal of Competition Law & Economics*, Volume 16, Issue 2, June 2020, 220–261 at 257. The authors however contend it is very unlikely that mergers could prove to be good for innovation in the absence of efficiencies.

[335] *Id*. at 26. A theory of harm is a claim that puts forward why the investigated action (such as an acquisition) should be prohibited as it breaches competition law rules.

[336] The concept of innovation ecosystem has gained rapid ground over the last decade. For digital sectors, innovation ecosystems do not refer to an individual undertaking operating in the digital sectors in particular, but comprise the entire innovative environment in which such undertakings operate. Therefore, concept of digital innovation ecosystem refers to the set of actors working collectively with resources to create value and promote innovation in digital sectors. These undertakings in different parts of an industry operate autonomously but work interdependently to create valuable outputs through innovation. *See* Oh DS, Phillips F., Park S., Lee E., Innovation ecosystems: A critical examination. *Technovation*, Volume 54, Pages 1-6, at 1 (2016). Suseno Y., Laurell C., Sick N, "Assessing value creation in digital innovation ecosystems: A Social Media Analytics approach", *The Journal of Strategic Information Systems* Vol 27 Issue 4, 335-349 (2018) at 2; Wang P, Theorizing Digital Innovation Ecosystems: A Multilevel Ecological Framework, PROCEEDINGS OF THE 27TH EUROPEAN CONFERENCE ON INFORMATION SYSTEMS (ECIS), at 6 (2019).

careful management.[337] Novelli notes the case of the substitution relationship between Apple's iPod and iPhone products, which demonstrates that cannibalization could lead to a situation where an innovative product, either a new model or a different product, could be perceived as substitution in the customers' eyes, and lead a decrease in the sales of the preceding product.[338] This is similar to the decreasing effect that the launch of GPS-enabled smartphones in 2008 had on the sales of portable navigation devices,[339] when they were substituted by an ecosystem output, in other words, cannibalized by the expanding borders of digital platforms. Depending on the industry which the innovation ecosystem affects, as the innovation in this ecosystem led to new technology, the old technology was substituted in terms of the consumer preferences, but in different speeds depending on both the emergence challenges and extension opportunities.[340] Empirical studies on the S curve (representing the product`s growth over time) and the link between the activities of the undertaking support that, in an innovation ecosystem, when there is low ecosystem emergence challenge and low ecosystem extension opportunity, the more innovative generations of a product swiftly gain a strong place in the market, while the innovative products facing high ecosystem emergence challenge and high ecosystem extension opportunity take considerably longer time to reach that level.[341]

Innovation ecosystems are also observed in non-digital markets, however the pace of substitution and hence cannibalization may prove to be much slower. For example, in the pharmaceutical market, do-it-yourself laboratories, contract research organizations, and pharmaceutical firms collaborated to form an innovation ecosystem in terms of research and development phase for new medicines.[342] Their interdependency with pharmaceutic companies formed a *biopharma ecosystem* where the actors generate commercial returns via different innovation models.[343] In the aerospace and defense sector, the ecosystem consists of different actors such

[337] Novelli, F. "Platform Substitution and Cannibalization: The Case of Portable Navigation Devices", Software Business ICSOB, at 3 (2012)..
[338] Novelli, F., Detection and Measurement of Sales Cannibalization in Information Technology Markets, Publications of Darmstadt Technical University, Institute for Business Studies (BWL) (2015)
[339] Novelli, F. *supra* note 337 at 152.
[340] Adner R. & Kapoor, R., "Innovation ecosystems and the pace of substitution: Re-examining technology S-curves" *Strategic Management Journal* 37.4 (2016) at 5-22.
[341] *Id.* at 24-28.
[342] Wu Q. & He Q., "DIY Laboratories and business innovation ecosystems: The case of pharmaceutical industry" Technological Forecasting and Social Change 161 (2020, at 4
[343] *Id.* at 7-8.

as suppliers, vendors, operators, and competitors, similar to digital innovation ecosystems, along with other key and leading elements including governmental agencies, international regulatory bodies.[344] However, the pace of substitution might be relatively slower than those in the digital sectors due to the sectoral necessity for a longer product life span.[345] Due to such differences, the innovation characteristics in non-digital sectors are more risk-reducing, slow-paced and collaborative, which might change the management perspectives as cannibalization might not be as direct or common as in digital markets. Depending on the sector involved, all of these shall need to be taken into account when formulating the defenses.

6.4 Appropriability

If appropriability is high (for example, through robust patent protection), a successful innovator is more likely to be able to turn its innovations into profits (*e.g.,* through sales or licensing) in a competitive market than in a stable market (with low switching rates). According to Shapiro, this finding is in line with Arrow's basic theory that product-market competition increases innovation. Shapiro also argues that, with high appropriability, a successful innovator has an increased incentive to innovate because it can obtain temporary market power, which provides a big incentive to innovate according to Schumpeter.[346]

When the level of appropriability is high, a merger will increase the incentive to invest in innovation for the merged entity. The reduction in the number of firms in the relevant market brought about by a merger between a given firm and one of its rivals would also increase the benefits that the new entity could expect to gain (appropriability), furnishing it with an incentive to invest where it may have chosen not to do so in the pre-merger market environment.[347]

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[344] Ritala P., Agouridas V., Assimakopoulos D., Gies O, "Value creation and capture mechanisms in innovation ecosystems: a comparative case study", Int. J. Technology Management 63, at 254 (2013)
[345] *Id.* 254-260.
[346] Shapiro, (2012) *supra note* 129 at 363 (2012). *See also*, Seiler, M. Innovation Competition In EU Merger Control (2018) (on file with the University of St. Gallen) *available at* https://mbl.ch/wp-content/uploads/2022/02/Abstract-Seiler-Markus.pdf.
[347] RBB Economics, (2017) *supra note* 166.

Although appropriability is not directly related to the number of innovation players in a market, concentration can increase appropriability because of the scale effects of cost-reducing process innovations and the reduction of adverse spillover effects.[348]

Motta and Tarantino have also analyzed the situation in which investments give rise to involuntary spillovers (whereas, in the base model, they assume instead that firms can fully appropriate their investments), and they have shown that the existence of such spillovers shares certain similarities with efficiency gains: since the merger allows the merging firms to internalize them, higher spillovers lead to stronger incentives to invest by the merged entity.[349]

6.5 Product-Market Competition and Contestability

The incentive and ability of firms to undertake innovation efforts will depend on the competition they face in the current product-markets.

A company would have an incentive to invest in innovation (and to develop new products) to the extent that it can replace its competitors' products with its own new products in the market, and thereby gain sales from those competitors. Moreover, a firm will have an incentive to innovate in order to protect its sales. The extent to which customers are willing to switch products depends on the dynamics of product-market competition.[350]

As mentioned before, according to Shapiro, the contestability principle is in line with Schumpeter's theory of innovation. If a company can gain substantial market shares through innovation, that will provide a significant incentive to innovate for that firm. This process is at the core of Schumpeter's '*creative destruction*' theory: the innovative firm may be rewarded with temporary market power as a result of its innovation. If, on the other hand, the market dynamics are such that a small

[348] Seiler, (2018) *supra* note 132 at 16-17.
[349] Motta, M. & Tarantino, E., THE EFFECT OF HORIZONTAL MERGERS, WHEN FIRMS COMPETE IN PRICES AND INVESTMENTS (University of Mannheim, Department of Economics, Working Paper No. 17-01 at 3 September 2017) *available at* https://ub-madoc.bib.uni-mannheim.de/42805/1/17-01_Motta%2C%20Tarantino.pdf at 3.
[350] Oxera, *supra note* 127 at 2.

company cannot grow even if it develops an innovation, such a small company will have less incentive to invest in innovation compared with a large company.[351]

Shapiro advocates considering the degree to which a firm's innovation efforts would make a market contestable, *e.g.,* cause consumers to switch their purchases to the innovating firm, or to continue purchasing from the innovating firm. The answer to this question turns less on the current concentration level or market share(s) in a particular sector since both large and small firms would have an incentive to make investments in contestable markets in order to maintain or gain market share, respectively. Instead, the question of contestability relates more to the nature of consumer preferences, the innovation at stake, and specific transaction characteristics (such as switching costs in the relevant market). Contestability will also depend on the ability of firms in other markets with innovation capacities to redirect their efforts to the market in question, which provides a challenging dynamic analysis.

The research conducted by Aghion *et al* demonstrates that innovation efforts exhibit a specific, if not unidirectional, pattern that depends on the structure of the product-market. The authors have shown that the relationship between industry mark-up and innovation (as measured by citation-weighted patent counts) takes the shape of an inverted-U; in other words, patent development increases with competition up until a certain point, after which it decreases.[352]

Its effect on product-market competition may partially determine a merger's impact on innovation. According to Jullien and Lefouili, the incentives of merging firms to innovate may be affected by higher post-merger margins and lower post-merger volumes. Under the *demand expansion* effect, the margin increase induced by a merger provides the merging firms with higher incentives to innovate in order to

[351] Shapiro, (2012) *supra note* 129 at 368. *See also* Seiler(2018) *supra* note 132 at 19.
[352] AGHION, P. & GRIFFITH, R., COMPETITION AND GROWTH: RECONCILING THEORY AND EVIDENCE. CAMBRIDGE, MA: MIT PRESS 701-728 (2005).

increase their demand.[353] Thus, higher post-merger margins raise the incentive to invest in demand-enhancing innovations.[354]

Bourreau, Jullien, and Lefouili have constructed a model to investigate the effects of a merger on demand-enhancing innovations.[355] They have studied the merged entity's incentives to increase its innovation efforts for a given behavior by its rivals. In other words, they have focused on the '*initial impetus,*' by referring to studies by Farrell and Shapiro, and Federico, Langus and Valletti. They have investigated the effects on innovation of a merger to monopoly (where the initial impetus is the only effect at work) in a symmetric context, assuming that (i) the outcome of innovation is deterministic, and (ii) investment levels are not observed by competitors prior to price competition taking place. In this regard, they first derived a necessary and sufficient condition for a merger to reduce the equilibrium level of innovation, allowing for (potential) small synergies in production. They then proposed a breakdown of the overall impact of a merger on the incentives to innovate. This analysis shows that a merger's impact is a combination of potentially opposite effects and that it can be either positive or negative, depending on the context. More specifically, in the baseline model, they have identified the following effects of a merger on the merging firms' incentives to innovate:

First, the merger affects the merging firms' output, and therefore, their incentives to innovate in order to increase their margin. This '*margin expansion*' effect, is negative if the synergies in production are small (or absent) because the merger leads to lower output by the merging firms for a given innovation level.

Second, the merger affects the merged firm's margin, and therefore, its incentives to innovate in order to increase demand. This '*demand expansion*' effect is positive, as a merger tends to increase margins.

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[353] Jullien, B., & Lefouli, Y., HORIZONTAL MERGERS AND INNOVATION (Toulouse School of Economics, Working Papers No. 18-892, (2018) *available at* https://www.tse-fr.eu/sites/default/files/TSE/documents/doc/wp/2018/wp_tse_892.pdf at 3.
[354] *Id*. at 18.
[355] Bourreau, M., Jullien, B. & LeFouli, Y., MERGERS AND DEMAND-ENHANCING INNOVATION (Tolouse School Of Economics, Working Paper No. 18-907, Mar. 2018, Revised Jul. 2018) *available at* https://www.tse-fr.eu/sites/default/files/TSE/documents/doc/wp/2018/wp_tse_907.pdf .

Third, a merger induces an '*innovation diversion*' effect, leading to the internalization of the impact that each merging firm's innovation investment has. The direction of this externality depends on the impact of an increase in one merging firm's investment based on the other merging firm's demand and can be either positive or negative, depending on the nature of the innovation. The innovation diversion effect is negative when this externality is negative, and it is positive when this externality is positive.

A final element of their analysis accounts for the effect of the merger on the return to innovation per unit of output, which is an effect that may mitigate or exacerbate the demand expansion effect. By applying the breakdown analysis to some of the specific models commonly used in the relevant literature, they illustrate that the overall impact of the merger can be either positive or negative and that the direction of this effect is partially driven by the "horizontal" or "vertical" nature of innovation.

The authors have also developed a simple model in which innovation has both a horizontal dimension and a vertical one, showing that the overall effect of a merger can be either positive or negative, depending on which dimension matters more in a particular case.

Finally, they extend their baseline model to account for technological spillovers, synergies in R&D, and significant synergies in production. A key insight from their analysis is that non-R&D synergies in production are essential not only for the effect of a merger on prices but also for its effect on the incentives to invest in R&D. In particular, they conclude that the fact that synergies in production may lead to an increase in output (for a given innovation level) implies that the margin expansion effect may become positive.

6.6 Efficiencies

6.6.1 Combining Complementary R&D Assets and Knowledge

It is widely accepted, both in the economics literature and by the competition enforcement authorities, that a merger which can combine complementary R&D

assets and knowledge will be able to increase the ability of the merged entity to innovate.[356]

6.6.2 Reduction in R&D Duplication

Denicolo and Polo have argued that the analysis of Federico *et al* fails to consider that a merger can increase the probability of successful innovation. This is because a horizontal merger allows the merged entity to reduce R&D duplication and to allocate its research resources to the most promising project(s). That, in turn, increases the probability of innovation success, which directly translates into higher consumer welfare.[357]

Denicolo and Polo's second paper[358] focused on mergers between firms that had to compete for projects at the development stage prior to the merger (*e.g.*, the development of a similar drug) and examined the impact of a merger on the merging firms' R&D efforts. In particular, they analyzed the incentive of the merging firms to discontinue one of the projects after the merger, to avoid cannibalization between their projects. The authors show that, whether the merged entity keeps both research units active, or conversely, shuts down one of the research units, depends on the shape of the curve representing the probability of success as a function of R&D efforts. In this framework, the merged entity closes one of the research units not due to pre-emptive motives, but for reasons that pertain to the efficiency of its R&D activities.[359]

6.7 Broadened application of R&D Projects and Innovation Sharing

Denicolo and Polo also emphasized the positive effects of sharing innovation among the merging parties and pointed out that broader applicability of research results (*e.g.*, basic innovations) may increase the incentive to invest in basic innovations.[360] They argue that the analysis in Motta and Tarantino's study relies on a restrictive assumption (at least in the baseline model, from which the sharpest results were

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[356] Mosso, (2018) *supra note* 162 at 4; *See also* Schulz (2007) *supra note* 135.
[357] Denicolò, V. & Polo M., "The Innovation Theory of Harm: An Appraisal" (2018), *available at* SSRN https://ssrn.com/abstract=3146731 at 11.
[358] Denicolò, V. & Polo M., "Duplicative research, mergers and innovation." *Economics Letters* 166 C (2018): 56–59.
[359] Bourreau, M. & De Streel A., "Digital Conglomerates and EU Competition Policy" (2019) *available at* SSRN: https://ssrn.com/abstract=3350512 at 20.
[360] Denicolò, V. & Polo M., "The Innovation Theory of Harm: An Appraisal" (2018), *available at* SSRN https://ssrn.com/abstract=3146731, at 26.

derived), which is that the innovations achieved by one firm can only be applied to that firm's production plants or products, both before and after the merger. Denicolo and Polo assert that, in many cases, this assumption appears to be unrealistic. Very often, new technologies developed by a firm can (in principle) also be used by others.[361] Therefore, when innovation is not firm-specific, mergers may spur innovation by facilitating the sharing of innovative technological knowledge among the merging firms. In this regard, sharing innovation expands the scope of application of new technologies, increasing their value, and hence enhances the merged entity's incentive to innovate. Denicolo and Polo contend that this effect may be so strong that a merger may increase total output and reduce prices, thereby benefiting consumers, even in the absence of static production synergies.[362]

The authors' premise is that innovation sharing may take place even among independent firms, via voluntary disclosures or through contractual licensing agreements. Although there may be various factors that impede the sharing of innovations among competitors, mergers eliminate the economic barriers to innovation sharing among the merging firms.[363] Accordingly, after the merger, the merging parties can share their fundamental discoveries and then apply them to a broader set of applied research projects. This possibility substantially increases the innovations' value for the merged entity and hence raises its incentive to invest in more research. [364]

Denicolo and Polo have elaborated and developed these insights further in another joint article, and thereby expanded them into a formal economic model. Their model is an extension of the setting of Federico *et al*, where they add a more basic "*research*" stage to the "*development*" stage, the output of which is a new product. The successful completion of the research stage guarantees higher productivity of the R&D expenditure that had been undertaken at the development stage. This productivity increase is not firm-specific or product-specific; the research stage

[361] *Id* at 4.
[362] *Id*.
[363] *Id*.
[364] *Id*. at 26.

produces innovative knowledge that can be used to facilitate the invention and development of a range of new products.[365]

In a duopoly where both firms complete the second stage, the firm that succeeds in the first stage has no incentives to share its intermediate innovation with its rival. Doing so would increase the probability that the rival would realize the final innovation, reducing the original firm's expected profits. In contrast, when the two firms merge, they would share the basic innovation. This would raise the R&D investment both in the research stage and development stages. The investment in the research stage increases as the basic innovation can be applied to the research projects of both divisions of the merged firm, and hence, becomes more valuable. The investment in the development stage increases, on average, as it is more likely that the R&D expenditure will be more productive due to the basic innovation.[366]

As a result, the merger increases the probability that new products will eventually be brought to the market. Even if the merger leads to a reduction in product-market competition, the positive effect on innovation may be substantial that the merger may increase overall social welfare and consumer surplus.[367] This study indicates that the claims of the "*innovation theory of harm*" can be reversed. A merger that would decrease output and increase prices for a given technological state may become pro-competitive because it spurs innovation.

VII. Conclusion

In merger control, the analysis on the part of competition authorities relies on various factors and an assessment of the closeness of competition between the two products and the competitive constraint exerted by the rivals' products. Innovation concerns of competition enforcement authorities in the assessment of horizontal mergers are mainly related to whether the merging parties can internalize the constraint between the rival products and whether this may give the merged entity an incentive to reduce its innovation efforts. In extreme cases, the merged entity can

[365] *Id*.
[366] *Id*.
[367] *Id*.

even discontinue one of the products in order to avoid cannibalization of the other product's sales.

The technical concept of '*innovation diversion ratio*' is the key parameter in evaluating the cannibalization effect. On the other hand, it may be quite difficult to estimate or determine the innovation diversion ratio in a given case.

The assessment of the impact of a merger on R&D investments requires a complex balancing exercise involving several factors that affect the incentives to innovate, most notably *cannibalization* and *appropriability*. The fact that these factors exert opposing influences on the merged entity's incentives to innovate implies that it would not be accurate to presume that one effect dominates the other.

The finding in the theoretical models that a horizontal merger reduces innovation incentives is mostly based on the assumption that the merger does not create any efficiency gains. This finding could be reversed if the synergies resulting from mergers are taken into account properly. Besides, the results can differ when other factors (such as the *demand expansion effect* and *margin expansion effect*) are considered as well. Competition authorities are also advised to contemplate and incorporate the welfare-increasing effects of information sharing and R&D cooperation between merging firms into their merger assessments.

In summary, there is not a single overarching general theory on the effects of mergers on innovation, and the findings of current theoretical research papers should be read and interpreted in light of the assumptions underlying a particular study. As for applying the conclusions of a given theoretical research study to a real-life/tangible merger case, one should carefully consider how the assumptions of the relevant research study match up with the particular facts and circumstances of the merger under examination.

Accordingly, the research will now turn to examining cases from the EU, UK and the US competition enforcement, and assess the extent innovation considerations have become, either in the form of a concern or a defense, a central topic of discussion by the relevant competition authorities.

Chapter 3

Innovation Considerations in Merger Control in the European Union

"The progressive development of man is vitally dependent on invention. Invention is the most important product of man's creative brain. The ultimate purpose is the complete mastery of mind over the material world, the harnessing of human nature to human needs."– Nikola Tesla[368]

I. Introduction

The digital revolution and globalization, as they extend their roots deep within the societies, have changed how concepts such as prosperity, competition, and development are perceived around the world. It is now evident that innovation and progress are phenomena that can inescapably alter the competitive landscapes of markets, production chains, utility, advertisement, and price, as well as bringing along the ability to create new markets, products, and efficiencies. Naturally, as a result, technological advancements have now become the driving force of economic growth, and innovation`s dynamic reflection bears more and more significance for the assessment of the competition in a given sector.

The milieu bridging the innovative technological leaps and the competitive theories of harm has multiple aspects and brings up an array of thorny questions. For instance, what happens to the R&D department of Company X, when it merges with a stronger Company Y, which is active in the same innovation space? Will one of the two R&D departments lose its significance or simply not be prioritized as much, considering cost and efficiency? What happens if Company X's product is removed from the market, once again due to cost considerations, and the merged entity continues its operations solely with Company Y's product? Will Company X's innovative efforts be redirected into another field or product? Will Company Y lower its total innovative

[368] Tesla N., *My Inventions: The Autobiography of Nikola Tesla.* Wilder Publications Inc, 2014.

budget, now that it no longer has to compete with Company X?[369] Alternatively, on the flip side of the coin, could Company X and Y merging actually lead to the compilation or synthesis of diverse and harmonized know-hows, thus creating "*complementary products or firms that have complementary skills?*"[370]

Competition law scrutinizes each link of the industrial chain and the competition authorities around the world act as guardians of consumer welfare. The maintenance of the delicate balance between innovation and competitiveness of markets has become a significant part of the antitrust enforcers' duties. Against this background, as the EU's competition overseer, the Commission's outlook on the assessment of innovation has become the leading voice and most influential force for other competition authorities. In this regard, the Commission's perspective on this issue provides a word of caution for tech-driven companies and innovators. The Commission, which is known to focus primarily on traditional parameters such as "*price, quality, and output*,"[371] also conducts detailed innovation analyses in its decisions;[372] now more so than ever, becoming more apparent with the highly debated *Dow/DuPont*,[373] and the subsequent *Bayer/Monsanto* decisions,[374] demonstrating its novel approach towards innovation assessments. However, the changeability of the methodology for assessing innovation-focused cases and the vague wording of the legislative framework have combined to make the task at hand quite tricky. This could also be observed in the zigzagging course that the Commission's decisions have taken in its case law. It is also important to note that certain sectors are more vulnerable than others to the changing winds of competition law assessment, such as the digital, pharmaceutical, telecommunications and aerospace industries, where innovative advances constitute a considerable competitive advantage for undertakings.

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[369] Petit, N., "Innovation Competition, Unilateral Effects and Merger Control Policy" *Mimeo*, (2018) *at* SSRN https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3113077.
[370] Shi, M., The Divestiture Remedies Under Merger Control In The US, The EU And China: A Comparative Law And Economics Perspective (2019) (on file with the Maastricht University).
[371] Colomo, I. P., RESTRICTIONS ON INNOVATION IN EU COMPETITION LAW (LSE Law, Society and Economy Working Papers 22, 2016) *at* http://ssrn.com/abstract=2699395.
[372] See *e.g.* cases discussed in more detail under Section V below.
[373] Dow/DuPont, European Commission Case M.7932 (Mar. 27, 2017)
[374] Bayer/Monsanto, European Commission Decision No. Case M.8084 (Mar. 21, 2018)

Because of the nature of these types of markets, the Commission applies a much stricter scrutiny in their competition assessments.[375] Moreover, the innovation assessment becomes even more intricate when it comes to the merger control aspect of competition law, where the Commission needs to conduct a successful *ex-ante* analysis of the innovative force of a concentration, during which the traditional tools of merger control assessment might fail to hit the mark.

All in all, this chapter aims to assess the innovation concerns and efficiencies derived from merger cases of the Commission, as well as the legal framework of the EU and the economic tools for innovation assessment, in order to provide an overview of the gradual transition of the Commission's approach pertaining to innovation considerations in the EU merger control.

II. An Innovation-Centric Overview of European Merger Control Legislation

The EU merger control regime, although brought under detailed regulation with the Merger Regulation,[376] is primarily sourced from the concept of the protection of competition in the internal market, as embedded in Articles 101-109 of the TFEU. The infrastructure built by the TFEU for the protection and monitoring of competition has tasked the Commission with overseeing transactions that have an EU dimension. The Commission is authorized to reject a transaction because it would "*impede effective competition in the common market or in a substantial part of it, in particular through the creation or strengthening of a dominant position*,"[377] thus declaring such a transaction to be incompatible with the stock market of the EU. It should be highlighted that TFEU Article 101(3) also provides that the retributive section of Article 101 shall not be applied in cases where the anti-competitive behavior "*contributes to improving the production or distribution of goods or to promoting technical or economic progress, while allowing consumers a fair share of the resulting benefit*"—as long as it does not impose indispensable restrictions or eliminate competition in a substantial part of the products in question. Accordingly,

[375] European Commission, Study for DG Enterprise And Industry (2000) *Impact of EU Competition Legislation on Innovation*.
[376] European Union, Council Regulation (EC) No 139 On the Control of concentrations between undertakings Official Journal I 24/1 (the "EC Merger Regulation" or "EUMR") (2004)*, available at* https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004R0139&from=EN.
[377] *Id*.

innovation has become a focal point for the Commission within different stages of its competition assessments, as discussed below.

The Relevant Market

The Commission has previously considered innovation when designating the relevant market in its competition assessments. The Commission Notice on the definition of the relevant market[378] does not directly refer to innovation, and although the Commission`s focus on innovation is revealed through the precedents and other supporting secondary legislation, the results of the evaluation study on the Commission notice indicate that there are market realities, such as innovation-intensive sectors, where market definition still requires careful application.[379] In this context, it could be said that the Commission exhibits a dual approach when integrating innovative power and market consideration: innovation which is or could be.[380] By way of connecting the dots, this approach is reflected in the Horizontal Co-operation Guidelines of the EU,[381] which states that "*R&D co-operation concerns the development of new products or technology which either may–if emerging–one day replace existing ones or which are being developed for a new intended use and will therefore not replace existing products but create a completely new demand.*"[382]

Delineating the borders of the relevant product-market remains a key aspect for the Commission`s assessment of many merger cases, simply because it also coincides with outlining the borders of the competitive analysis, where elements such as market share and position, competitors and buyer power, amongst others, are identified from this initial deduction.[383] In innovation-centric sectors, the approach towards the relevant market carries significant weight, as it is easy to overlook that innovation occurring outside the borders of the relevant market may also have the

[378] European Commission, (1997) Commission Notice on the definition of the relevant market for the purposes of Community competition law. C 372/5.
[379] European Commission, (2021) Evaluation of the Commission Notice on the definition of relevant market for the purposes of Community competition law of 9 December 1997, p62 *available at* https://competition-policy.ec.europa.eu/system/files/2021-07/evaluation_market-definition-notice_en.pdf
[380] Laskowska, M., "A Global View of Innovation Analysis in EC Merger Control" (2013) *available at* SSRN http://dx.doi.org/10.2139/ssrn.2337174.
[381] European Commission, (2011) Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements C 11/1.
[382] *Id*. at 119.
[383] European Commission, (1997) Commission Notice on the definition of the relevant market for the purposes of Community competition law. C 372/5.

power to drastically alter the relevant market.[384] (Hence, the Commission`s move away from traditional approaches and introduction of the concept of innovation spaces in *Dow/Dupont* and *Bayer/Monsanto* for their herbicides, insecticides and fungicides, discussed here in detail below).[385]

In this context, the Horizontal Co-operation Guidelines have examined the question of an innovation market under research and development agreements. Although the application of Article 101 and competition restrictive agreements is an altogether different branch of the overall European competition law regime, the following excerpt clearly outlines the primary method in determining a market based on a product that remains unknown at the time:

> "[A]t one end of the spectrum of possible situations, innovation may result in a product (or technology) which competes in an existing product (or technology) market. This is, for example, the case with R&D directed towards slight improvements or variations, such as new models of certain products. Here possible effects concern the market for existing products. **At the other end of the spectrum, innovation may result in an entirely new product which creates its own new product-market (for example, a new vaccine for a previously incurable disease).** However, many cases concern situations in between those two extremes, that is to say, situations in which innovation efforts may create products (or technology) which, over time, replace existing ones (for example, CDs which have replaced records). A careful analysis of those situations may have to cover both existing markets and the impact of the agreement on innovation."[386] *(Emphasis added.)*

[384] Also known as "disruptive innovation." European Commission (2016) Competition Policy Brief *EU merger control and innovation*, *available at* http://ec.europa.eu/competition/publications/cpb/2016/2016_001_en.pdf.

[385] This approach is different in the UK where the CMA aims to focus more on competitive assessment rather than a strict market definition. (CMA Merger Assessment Guidelines, (CMA129), (2021) para 9.2) As per the CMA Guidelines, market definition provides a framework for assessing the competitive effects of a merger and involves an element of judgment; however, the boundaries of the market do not determine the outcome of the analysis of the competitive effects of the merger, recognizing that CMA will assess the constraints on merging parties from outside the relevant market, segmentation within the relevant market, or other material constraints, if any. (para 9.4) Accordingly, in *Roche/Spark Therapeutics*, the CMA focused its assessment on the likely impact of the merger with regard to (i) innovation, (ii) price and (iii) product quality and market expenditure, and evaluated that the prevailing conditions of competition is associated with both merging parties, along with other market players' continuation of investment and innovation compatible in terms of their pre-merger business plans. (*Roche/Spark Therapeutics,* (Case ME/6831/19; 16.12.2019)) *See also* Chapter 2 above for a brief comparison of the EU, UK and US approaches.

[386] European Commission, (2011) Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements C 11/1, at 112.

Moreover, there are examples of cases where the Commission approached the relevant product-market solely based on the R&D aspect, thus creating a distinction between the assessments of "*competition in the existing markets"* and "*competition in innovation*."[387] Herein, it should be noted that the concept of "*innovation markets"* alone creates discord and debate; some commentators have criticized this concept as nebulous and borderless, and pointed out that economic and competitive analyses cannot be conducted with regard to such "innovation markets" due to the unpredictability and limited foresight of *ex-ante* assessments when it comes to unknown players and market parameters.[388]

Significant Impediment of Effective Competition

The second and principal innovation consideration in the European merger control regime is the reflection of innovation in the substantive competitive case analysis. Under the EU's Merger Regulation, the substantive test applied in merger control cases by the Commission involves the assessment of whether a transaction results in "*significant impediment of effective competition*" ("SIEC").[389] The Merger Regulation nods to the concept of dominance therein, by stating that SIEC generally occurs by the creation or strengthening of a dominant position. As a result, a bridge between the possibility of SIEC and innovative analysis is built during the Commission's assessment, as detailed in the below analyses of precedents. Furthermore, in the primary legislation, the Merger Regulation leaves the framework for the assessment of theories of harm and efficiencies to the guidelines that will be published by the Commission.[390] In the scope of the guidelines, the Commission makes a distinction between horizontal and non-horizontal mergers.

Horizontal Mergers

[387] Vancraybex, E., INNOVATION IN THE EU MERGER CONTROL BATTLEFIELD: IN SEARCH FOR BEST PRACTICES (Maastricht Centre for European Law, Working Paper No. 1, 2018).
[388] Carrier, M. A., "Two Puzzles Resolved: Of the Schumpeter–Arrow Stalemate and Pharmaceutical Innovation Markets." *Iowa Law Review* 93 2 (2008): 393-450.
[389] This test was introduced in the scope of the new Merger Regulation (in force today), which was drafted and adopted to replace the Merger Regulation of 1990.
[390] European Union, Council Regulation (EC) No 139 On the Control of concentrations between undertakings" Official Journal I 24/1 (the "EC Merger Regulation" or "EUMR") (2004) *at* para. 28 and 29*, available at* https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004R0139&from=EN.

The Horizontal Merger Guidelines ("HMG") recounts the benefits of effective competition as "*low prices, high-quality products, a wide selection of goods and services, and innovation*."[391] It should, however, be noted that the HMG does not give a concrete definition for the concept of "innovation," despite subsequently referring to it multiple times. Therefore, it is evident that the legislative position of the Commission leaves the door open to a case-by-case analysis, in order to identify and demarcate innovation by considering the facts of the case at hand in any given assessment. In any event, any diminishments in innovation, along with price, reduction of output, choice or quality of goods (amongst others), have been listed as an element that would indicate "*increased market power*," which undertakings may achieve by way of a horizontal merger.[392,393]

However, acknowledging innovation as a market element that could be diminished or reduced post-merger does not, by itself, establish how innovation-centric theories of harm are structured within the legislative framework. The HMG also refers to the grey area in-between, by stating that "*a merger may increase the firms' ability and incentive to bring new innovations to the market and, thereby, the competitive pressure on rivals to innovate in that market*," whereas *"effective competition may be significantly impeded by a merger between two important innovators, for instance between two companies with 'pipeline' products related to a specific product-market*."[394] In addition to the foregoing, the HMG also puts forth and explicates the possible competition law concerns arising from a merger between two companies where one is already active in a particular market, and the other could easily enter without having to endure significant sunk costs or "*is very likely to incur the necessary sunk costs to enter the market in a relatively short period of time*."[395]

The Guidelines go on to explain that two conditions would cause a red flag to be raised when assessing the proposed merger of potential competitors. Firstly, the

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[391] European Commission (2011) The Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings, C 031 *available at* https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52004XC0205(02)&from=EN ("HMG").
[392] *Id*.
[393] Similar to the structure in the Horizontal Merger Guidelines, the word "*merger*" is used to cover all types of concentrations within the meaning of the EU merger control regime, *e.g.,* acquisitions, joint ventures, takeovers, etc.
[394] European Commission (2011) HMG at para 38.
[395] *Id*. at para 59.

potential competitor should already constitute a competitive pressure or demonstrate the likelihood of doing so in the future. Secondly, the number of remaining potential competitors should be insufficient.[396] The fulfillment of these two conditions would lead the Commission to assess the transaction for any "*significant anticompetitive effects.*" It should also be noted that the assessment of the market entry period of the potential competitors (which may be deemed to lead to an anti-competitive effects assessment if anticipated to be within a "*relatively short period*"), is also determined on a case-by-case basis. Therefore, the market specifics, such as the product cycle and the aptitude of the potential competitor, would be taken into consideration.[397,398]

As acknowledged by the HMG, innovation considerations also present other difficulties when it comes to the technical assessment of a proposed merger. The market share calculation constitutes "ground zero" for most concentration analyses. In a "mature" market, a new entrant would be expected to grow its market share gradually, and any dramatic changes in market shares would be regarded as uncommon and unusual.[399] However, in fast-moving and innovative sectors, the market shares of an undertaking may not be sufficient to accurately depict the market reality, due to a number of factors. Firstly, the ability for a new player to step into the relevant market and create a whole new portion/source of supply would be deemed more likely in such a sector.[400] Secondly, an existing competitor may also alter the distribution of demand in a market by offering a new/enhanced product,[401] and this possibility is explicitly referenced in the HMG by: "*a firm with a relatively small market share may nevertheless be an important competitive force if it has promising pipeline products*." Therefore, rapid changes in the market structure would lower the predictive power of a market share assessment for competition law purposes. A similar conclusion can also be reached with respect to the Herfindahl-

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[396] European Commission Competition merger brief, (May 1, 2017), *available at* http://ec.europa.eu/competition/publications/cmb/2017/kdal17001enn.pdf .
[397] *Id*.
[398] Para. 74 of the HMG stipulates that entry within two years, under normal circumstances, would be regarded as "*timely*" with the caveat that such assessment would be based on the facts of the case.
[399] Encaoua, D. & Hollander, A., "Competition Policy and Innovation," *Oxford Review of Economic Policy* 18 1 (2002): 63–79 *available at* https://doi.org/10.1093/oxrep/18.1.63.
[400] OECD, Merger Review in Emerging High Innovation Markets, Policy Roundtable. (2002), *available at* http://www.oecd.org/daf/competition/mergers/2492253.pdf .
[401] *Id*.

Hirschman Index (HHI),[402] where the standard conclusions attained via HHI would be deemed inapplicable if "*one or more merging parties are important innovators in ways not reflected in market shares*."[403] As a result of the foregoing considerations, the question that must be asked at this juncture is whether the legislative framework relating to assessment methods, such as the HHI, the definition of a relevant market and market shares (and thus, the utilization of static analysis tools) would correspond to the realities of dynamic and innovative markets, and whether they would be adequate for competition law assessments in such markets. There is a real and underappreciated risk that the utilization of stagnant methodologies, in such a scenario, may even cause consumer welfare to diminish,[404] due to over-intrusive and counterproductive competitive analyses.

Non-horizontal mergers

An innovation-oriented competition law assessment is certainly not exclusive to horizontal mergers. Non-horizontal mergers are also scrutinized with innovation considerations in mind, as indicated in the legislative framework and the relevant case-law of the Commission.[405] Non-horizontal mergers occur when undertakings in different levels of the production chain come together and join their forces.[406] A competitor is not removed from the market in question as a result of a non-horizontal merger; instead, a non-horizontal merger paves the way for an integrated vertical portfolio, which has the potential to create a number of efficiencies.[407] Nevertheless, as vertical mergers do not commonly result in the elimination of an innovator/innovation process from the market, the strict scrutiny applied to horizontal

[402] European Commission (2011) HMG *at* para. 16. "In order to measure concentration levels, the Commission often applies the Herfindahl-Hirschman Index (HHI). The HHI is calculated by summing the squares of the individual market shares of all the firms in the market. The HHI gives proportionately greater weight to the market shares of the larger firms. Although it is best to include all firms in the calculation, lack of information about very small firms may not be important because such firms do not affect the HHI significantly. While the absolute level of the HHI can give an initial indication of the competitive pressure in the market post-merger, the change in the HHI (known as the 'delta') is a useful proxy for the change in concentration directly brought about by the merger."
[403] *Id*. at para. 20(1).
[404] Sidak, G. J, & Teece, D. J., "Dynamic Competition in Antitrust Law" *Journal of Competition Law and Economics* 5 4 (2009): 581-631.
[405] The Commission assessed the possibility of vertical input foreclosure in the scope of the *Intel/McAfee* merger. *Intel/McAfee*. European Commission Decision No. Case COMP/M.5984 (Jan. 26, 2011).
[406] A vertical merger, for this paper, is used as an umbrella term for vertical and conglomerate transactions in the scope of the EU merger control regime.
[407] Seiler, (2018) *supra* note 132.

mergers in this regard is not expected to be reflected in the assessments of non-horizontal mergers, at least not at the same level of intensity.[408]

The competitive analysis of the vertical integration of two or more undertakings would focus on whether the undertakings in question can limit output or increase prices in the post-merger market, thereby shutting downstream rivals out of the market. This could occur by the foreclosure of rival undertakings, which is required to innovate in that particular market. Similar to the HMG, the Commission's Non-Horizontal Merger Guidelines ("NHMG"), defines effective competition in parallel with the HMG. Conversely, a vertical or conglomerate merger is seen as less of a threat to effective competition and is known to give rise to multiple efficiencies, including service improvements or "*stepping up innovation*."[409] In correlation, the NHMG sets out that it is less likely for a non-horizontal merger to create coordinated effects unless the post-merger assessment of HHI or market shares are below certain thresholds. Nevertheless, the NHMG stipulates some exceptional circumstances in which the Commission will apply greater scrutiny to a non-horizontal merger, one of which clearly articulates the following circumstances: "a *merger involves a company that is likely to expand significantly in the near future, e.g., because of a recent innovation.*"[410]

Thresholds and Article 22

Concerned by a perceived rise in "killer acquisitions" and their effects on innovation, the Commission conducted a study regarding the effectiveness of thresholds in mergers[411] which concluded that while the mechanisms in place were able to capture most of the transactions which had a significant impact on competition in the EU internal market, there were still a few transactions, especially in the digital and pharma sectors, which were able to evade the review mechanism of the Commission

[408] *Id*.
[409] European Commission (2008) Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings. 265/6.
[410] *Id* at, para. 26.
[411] European Commission (2021), Commission Staff Working Document Evaluation of procedural and jurisdictional aspects of EU merger control, SWD(202) 66final, Brussels, 26 March 2021 *available at* https://ec.europa.eu/competition/consultations/2021_merger_control/SWD_findings_of_evaluation.pdf .

and member states. Accordingly, the Commission published a guidance[412] regarding the "referral mechanism" set out in Article 22 of the EU Merger Regulation. Initially designed for member states without a merger control regime to refer cases to the Commission,[413] this article had only been used for cases where the referring member states had jurisdiction.[414] Now, Article 22 has been re-appraised as a tool to catch transactions which do not meet the jurisdictional turnover thresholds but are otherwise deemed "competitively significant." The first application of this re-appraised Article 22 referral was used in the proposed Illumina/Grail transaction (explained further below).

Efficiencies

It is important to note that the Merger Regulation also accommodates the possibility that the efficiencies that a transaction gives rise to might also mitigate the competition law concerns that it has the potential to cause,[415] so long as these efficiencies are "*beneficial for consumers, merger-specific and verifiable*."[416] However, verifying such efficiencies creates a challenge in practice, as the innovative force and potential of a company are often difficult to foresee and, more importantly, to quantify through qualitative economic assessments. Additionally, the requirement that the efficiencies must be merger-specific would mean that the transaction parties would have to prove that the efficiencies that they claim to counterbalance the anti-competitive effects of the transaction could not be achieved by less anti-competitive alternatives (such as licensing agreements, joint ventures, or

[412] European Commission (2021), Commission Guidance on the application of the referral mechanism set out in Article 22 of the Merger Regulation to certain categories of cases, C(2021) 1959 final, Brussels, 26 March 2021 ("***Article 22 Guidance***") *available at* https://ec.europa.eu/competition/consultations/2021_merger_control/guidance_article_22_referrals.pdf

[413] *See* Bristows, "Illumina/Grail: bio-tech companies in the firing line as the European Commission expands the limits of European merger control", 13 October 2021 *available at* https://www.bristows.com/news/illumina-grail-bio-tech-companies-in-the-firing-line-as-the-european-commission-expands-the-limits-of-european-merger-control

[414] Van Bael & Bellis, "Commission issues Statement of Objections in Illumina/ Grail gun-jumping investigation as parties argue jurisdictional overreach" VBB on Competition Law, Volume 2021, No 8 & 9 *available at* https://www.vbb.com/media/Insights_Newsletters/VBB_on_Competition_Law_Volume_2021_No_8-9.pdf

[415] European Union, Council Regulation (EC) No 139 On the Control of concentrations between undertakings" Official Journal I 24/1 (the "EC Merger Regulation" or "EUMR") (2004), *available at* https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004R0139&from=EN .

[416] European Commission (2016) Competition Policy Brief EU merger control and innovation. *Available at* http://ec.europa.eu/competition/publications/cpb/2016/2016_001_en.pdf .

a differently structured transaction).[417] In other words, the efficiencies must be in a relationship of "direct causality" with the transaction itself.[418] As a result, in practice, the "efficiency escape route" is claimed, but not preferred, due to the difficulties that the transaction parties may run into when attempting to demonstrate, validate and prove the three conditions listed above.[419]

Nevertheless, the demonstration of consumer-benefiting efficiencies is not the only exit route in the context of merger control. The parties to a transaction are also entitled to offer solutions, such as divestitures or behavioral commitments, to remedy the anticompetitive effects of a merger transaction. Such commitments will be market-tested by the Commission, in order to assess not only their applicability but also to consider the views of market participants concerning the potential remedying effects.[420]

III. Approaching Innovation in EU Merger Control: The Debate, the Progress and the Focus Areas

Although the legislative framework of the European merger control regime refers to the concept of "innovation" on several occasions, it is also sufficiently vague to allow the case-law of the Commission to fill in the blanks and to enable the Commission to try various approaches in its application. The approach and the oversight of the Commission are explained in detail below through a case-by-case analysis. However, it is essential to note at the outset that the intricate structure of economic innovation theory comprises numerous segments, which also alters and affects the legal theory and assessment of innovation. In addition, the development of a sound legal theory for assessing the link between competition and innovation has been accelerated as the topic has gained currency and relevance due to rapid technological advancements in recent years. In specific sectors, both the policies of competition authorities and the economic doctrine applied in such assessments have varied substantially over time.

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[417] Gürkaynak G. & Topaloğlu, S. N., "Turkey: Innovation based analysis of mergers." *Concurrences Review* 1 (2019): Art. 88891.
[418] OECD, The Role of Efficiency Claims in Antitrust Proceedings, Policy Roundtables (2012).
[419] *Id*.
[420] European Commission (2008) Commission notice on remedies acceptable under Council Regulation (EC) No 139/2004 and under Commission Regulation (EC) No 802/2004. C 267/1.

3.1 Chasing Innovation: Definitions and Classifications

"*INVENTION is here interpreted broadly as the production of knowledge.*" – Kenneth J. Arrow[421]

For competition law, defining the precise meaning of "innovation"[422] has proved to be a difficult challenge, both within case law and in doctrine. A business-oriented definition is found in the Oslo Manual of the OECD, which defines innovation as "*a new or improved product or process (or combination thereof) that differs significantly from the unit's previous products or processes and that has been made available to potential users (product) or brought into use by the unit(process).*"[423] There are other (and vaguer) definitions in the doctrine, where the focus shifts to the notion of a novel "idea," such as "*a multistage process of transforming ideas into new products/services or processes*."[424] Other approaches have added in the value of consumer welfare, and describe innovation as "*the ability to apply new ideas and transform them into commercial or social outcomes that enhance consumer welfare by using new processes, products, or services.*"[425]

The various types of innovation and how they correspond and interact with the market competition is based on a few different characteristics. In this regard, the historical context of innovation theory cannot be communicated without acknowledging the previously introduced Schumpeterian view of innovation.

The Schumpeterian perspective on innovation correlates the five sub-categories of innovation to what he calls "*creative destruction*,*"* in which novel units of production replace the dated or outmoded products. The Commission's policy brief on innovation, however, refrains from defining the concept itself and instead focuses on the distinctions between different types of innovation.[426] It is unclear whether the

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[421] Arrow, (1962) *supra* note 133.
[422] Derived from the word "*innovatus*" in Latin, which is traced to "*innovo*," meaning "to renew or restore," the connotations this concept has carried throughout history are discussed in detail in Chapter 1.
[423] OECD, Oslo Manual - Guidelines for Collecting, Reporting and Using Data on Innovation, 4th ed. The Measurement of Scientific, Technological and Innovation Activities, OECD Publishing, Paris/Eurostat, Luxembourg (2018).
[424] Vincent E. J. A., The Impact Of Regulation On Innovation: A Case Study On Small Biscuit Producers In The Netherlands (2017) (on file with the University of Twente).
[425] Ranchordás, S., "Innovation Experimentalism In The Age Of The Sharing Economy." *Lewis & Clark Law Review* 19 4 (2015): 871-924.
[426] European Commission (2016) Competition Policy Brief EU merger control and innovation. *Available at* http://ec.europa.eu/competition/publications/cpb/2016/2016_001_en.pdf.

Commission's categorizations nod to Schumpeter in any way; however, one can still recognize the similarities.

The Commission makes the initial distinction to the end-result of innovation; namely, a distinction is drawn between (i) product innovation and (ii) process innovation. In simple terms, product innovation is the introduction of a new product to the market. Herein, the Commission also takes into account significant changes "*to [the product's] characteristics or intended uses*."[427] In the doctrine, product innovation is commonly deemed to give birth to a patentable outcome.[428] As for process innovation, it refers to the application of a new method or the improvement of an existing method of production or delivery.[429,430] Process innovation does not usually result in a patent; therefore, the ability to invest in process innovation is oft found in undertakings with higher market power, since a prominent market player would be better able to reflect the costs of the improvements/changes to the price of the product itself.[431] Therefore, the incentive to invest in and to intensify the undertaking's focus on a specific type of innovation would be based on a financial appropriation assessment by any market player, which would lead to different results depending on numerous elements, including market power.[432]

The Commission's second categorization focuses on the length of the "innovative leap," or in other words, the significance of the change occurring as a result of the innovation. The first type of such innovative leap is known as "incremental" innovation. This self-explanatory term refers to changes or improvements on an existing product or process, which the Commission refers to as "*a small step*

[427] *Id*.
[428] Carrier, (2008) *supra* note 388.
[429] *Id*.
[430] In summary, it is important to note that the OECD's Oslo Manual, assuming a more business management outlook on the topic, specifies process innovation as '*business process innovation*' and defines it as "*is a new or improved business process for one or more business functions that differs significantly from the firm's previous business processes and that has been brought into use by the firm."* OECD, (2018) Oslo Manual 2018 - Guidelines for Collecting, Reporting, and Using Data on Innovation, 4th Edition. The Measurement of Scientific, Technological, and Innovation Activities, OECD Publishing, Paris/Eurostat, Luxembourg.
[431] Carrier (2008) *supra* note 388.
[432] Torfason, O. P., Appropriability Mechanisms and Strategies for Innovations - The Case of Rotulus (on file with the Copenhagen Business School) (2011) *available at* https://pdfs.semanticscholar.org/0355/1e7d8ebd1a5ff21b2031e47248dfbc113908.pdf

forward."[433] Conversely, a major innovative leap is required for an innovation to be described and categorized as a "breakthrough innovation."

The final classification on the Commission's policy brief is based on the "game-changing" ability of the innovation. In this context, improving on what is readily available is defined as "*sustaining innovation*," whereas displacing the old by implementing a novel "value network" is defined as "*disruptive innovation."*[434] Therefore, a disruptive innovation could have the power to create an entirely new market, making it the most difficult type of innovation to analyze or foresee by competition policymakers.[435]

The doctrine has also made additional categorizations, with special focus on, for instance, the market power/position of the innovator firm, the source of the innovation initiative, the availability of the innovation,[436] or the freedom that the innovation gives the innovator to not be limited or constrained by competitive pressures (*i.e.,* drastic vs. non-drastic innovation).[437,438]

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[433] European Commission (2016) Competition Policy Brief EU Merger Control and Innovation. *Available at* http://ec.europa.eu/competition/publications/cpb/2016/2016_001_en.pdf. See also, Thomond P. & Lettice, F. (2002) Disruptive Innovation Explored, 9th IPSE International Conference on Concurrent Engineering: Research and Applications (CE2002).

[434] *Id*. In literature, there are also different definitions of disruptive innovations from different perspectives (Si S. & Chen, H "A Literature Review of Disruptive Innovation: What it is, how it works and where it goes", 56 Journal of Engineering and Technology Management, (2020)). These take into account (i) specific domain and effects (ii) process (iii) effects and (iv) characteristics: In terms of "specific domain and effects" a new technology which outperforms an existing one disrupts the market. (Hajhashem M., Khorasani, A. "Demystifying the Dynamic of Disruptive Innovations in Markets with Complex Adoption Networks: From Encroachment to Disruption" International Journal of Innovation and Technology Management, Vol. 12 No.5 (2015), 12; Ariel, K.H.L,. Ngai W.T.E, Lo K.Y.C, "Disruptive information technology innovations and the cost of equity capital: The moderating effect of CEO incentives and institutional pressures" 53 Information & Management 345-354 (2016).) In terms of "process", existing competitors do not appear in the market due to disruptive innovation. (Levina, M "Disrupt or Die: Mobile Health and Disruptive Innovation as Body Politics" (2017)Television & New Media SAGE Publications 548-564 at 18). In terms of "effects", new demands, new competitors and new ways of operating are created as a result of disruptive innovation. (Suseno Y., "Disruptive innovation and the creation of social capital in Indonesia's urban communities" 24 Asia Pacific Business Review 174-195, (2018).). In terms of "characteristics", disruptive innovation brings radical new functionality and changes consumer expectations. Nagy D., Schuessler J., Dubinsky, A. "Defining and identifying disruptive innovations" 57 Industrial Marketing Management 119, 120 (2016); Reinhardt R. & Gurtner, S "Differences between early adopters of disruptive and sustaining innovations", 68 Journal of Business Research 137-145, (2015)

[435] Graef, I. , Wahyuningtyas, S. Y. & Valcke, P., 'How Google and Others Upset Competition Analysis: Disruptive Innovation and European Competition Law', *25th European Regional Conference of the International Telecommunications Society (ITS),* Brussels, Belgium, Jun. 22-25 (2014), *available at* https://www.econstor.eu/handle/10419/101378.

[436] Lugard, P. and Cardwell, D., "Innovation is King. Or is it? Summary Observations on the Application of EU Antitrust and Merger Control Law to Innovation-related Transaction." *CPI Antitrust Chronicle* (Sep. 2012): 2. Mansfield E., "Contribution of R&D to Economic Growth in the United States." *Science* 175 4021 (1972): 477-486.

[437] Carrier, (2008) *supra* note 388.

[438] Belleflamme P.& Peitz, M., *Industrial Organization: Markets and Strategies*, Cambridge University Press, (2009).

All in all, it is crucial to recognize that innovation itself is a dynamic concept in law and economic theory. Therefore, it is reasonable to assume that the approaches, definitions and categorizations will vary, as will the practical application of competition law policies. In this context, it is perfectly understandable that policy makers may choose to refrain from drawing the borders of the concept of "innovation" too strictly with a definition that is set-in-stone, as they may prefer to leave room for nimble maneuvering regarding considerations of unknown market dynamics that the future might hold, and thereby enable the Commission's outlook and approach to innovation to progress from the traditional to the novel.

3.2 The Debate and its Reflection on the Enforcement Approach to Interactions of Innovation and Competition

"The first thing to go is the traditional conception of the modus operandi of competition. Economists are at long last emerging from the stage in which price competition was all they saw." – J. A. Schumpeter[439]

The puzzle of the interplay between innovation and competition is this: does competition nurture or weaken innovation? This fundamental question has led to numerous debates between economists and policy makers, as discussed under Chapter 2. Nevertheless, as the economists attempt to analyze whether a concentrated market would create an incentive to innovate and excel,[440] it falls on the policy makers to try and establish a middle ground between innovation and competition and to strike a delicate balance in order to foster innovation without being artificially intrusive on the competitive parameters of a given relevant market.

In this respect, the divisions among the proponents of economic innovation theory regarding the market environment which is most capable and conducive to fostering innovation has led to the infamous debate between the two opposing schools of thought: in support of Schumpeter vs. in support of Arrow. Simply put, the Schumpeterian view stipulates that, in a more highly concentrated market, a strong market player or a monopolist would have less to fear from competitors, and therefore, more to spend and more to gain from engaging in innovative processes.

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[439] Schumpeter, J. A., *Capitalism, Socialism and Democracy*, New York: Harper and Brothers, 1942.
[440] Shapiro, (2012) *supra note* 129

When it comes to the application of this view in practice, Schumpeterians contend that a strong undertaking could implement a better infrastructure for R&D and for innovative funding.[441] The financial outcome or appropriation of this process could be higher for a firm with strong market presence, high production capacity, and powerful marketing, thus making it even more profitable for such market leaders to innovate.[442] As for Kenneth Arrow, he claimed, in contrast to Schumpeter, that a monopolist would gain more by the preservation of the status quo,[443] and would thus have no incentive for novelty that would shake up the market structure; and protect itself from innovation "cannibalizing"[444] the profits of the existing products or services.[445]

The two diverging opinions were consolidated and synthesized by Carl Shapiro, who claimed that they did not contradict each other and that they had the potential to be integrated, based on three fundamental principles: contestability, appropriability, and synergies as set out in Chapter 2.[446] The Commission's policy brief touches upon these concepts and points out that these are in line with the EU's legal framework.[447]

Competition policymakers can assess each side of these arguments to arrive at their own conclusions or try to integrate these views in order to adopt their own. The European Commission's policy paper on innovation and merger control also recognizes the existence and significance of this debate and acknowledges the split in the literature. Although the Commission does not take a strong position in this respect, the different approaches evinced by the Commission's case-law demonstrate that, during the assessment of an actual concentration situation, the inclinations of the Commission may shift. In this respect, the Commission has set out

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[441] Baker, J. B., "Beyond Schumpeter vs. Arrow: How Antitrust Fosters Innovation" *Antitrust Law Journal* 74 3 (2007): 575-602 *available at* http://dx.doi.org/10.2139/ssrn.962261.
[442] European Commission (2016) Competition Policy Brief EU merger control and innovation. *Available at* http://ec.europa.eu/competition/publications/cpb/2016/2016_001_en.pdf
[443] Shapiro, (2012) *supra note* 129
[444] European Commission (2016) Competition Policy Brief EU merger control and innovation. *Available at* http://ec.europa.eu/competition/publications/cpb/2016/2016_001_en.pdf.
[445] Also known as the "Arrow effect" or the "replacement effect." *See* Etro, F., *Competition, Innovation and Antitrust: A Theory of Market Leaders and Its Policy Implications.* Springer Science & Business Media, Berlin: Heidelberg, 2007.
[446] Shapiro, (2012) *supra note* 129.
[447] European Commission (2016) Competition Policy Brief EU merger control and innovation. *Available at* http://ec.europa.eu/competition/publications/cpb/2016/2016_001_en.pdf.

its stance within the scope of its policy paper, stating that "*As long as competition policy promotes contestability (i.e., by keeping markets competitive) and does not unduly negatively affect appropriability, it will be compatible with both Arrow and Schumpeter and therefore will encourage innovation*."[448] In a more recent policy brief on industry concentration, the Commission contends that in light of the trend of increasing concentration and profits, competition enforcement cannot afford loosening the reins, and deems that (referring to the current economic climate post-Covid) a strong enforcement of EU competition policy "promotes efficiency and encourages innovation".[449]

Such intricate and layered outlooks in theory and the framework of the relevant legislation leave ample elbow room for the Commission to assume different approaches as it applies and implements the principle ideas in its case law. Following an investigation, the Commission is known to make progress in its methodology and policy, obviously depending on the particular facts of the concentration transaction. This progress is visible most clearly in the Commission's transition from a traditional approach to a novel approach in merger control assessments, which was a gradual and incremental process, as demonstrated below. It may be fair to say that the Commission views lean closer to the Arrowian stance with respect to effect of these transactions on innovation: the burden remains asymmetrically high for efficiency defenses that can be employed by the entities, which means any uncertainty regarding the future of innovation is deemed perpetuate the presumption of harm and distrust against concentrations.

IV. The Commission's Traditional Approach to Innovation in Merger Control

4.1 Ground Zero for Innovation Assessments: The Traditional Approach

Under the HMG,[450] since the mid-1990s—innovation is considered a competitive parameter. The Commission can assess mergers' impact on innovation[451] in order to

[448] European Commission (2016) Competition Policy Brief EU merger control and innovation. *Available at* http://ec.europa.eu/competition/publications/cpb/2016/2016_001_en.pdf .

[449] European Commission (2021) Competition Policy Brief Industry concentration and competition policy. Available at https://op.europa.eu/en/publication-detail/-/publication/e2e54d72-5cbf-11ec-91ac-01aa75ed71a1/language-en

[450] European Commission (2011) The Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings, C 031 Official Journal of the European Union

preserve or even foster innovation in the marketplace. In fact, back in 1992, in the Commission's *DuPont/ICI* decision,[452] the threat to innovation was treated as a competitive concern within the framework of the transaction between the leading firms in the relevant product-market (*i.e.,* nylon carpet fiber), since the competition took place between ICI and DuPont specifically in terms of innovation and product development. In this respect, the Commission ultimately decided to approve the transaction conditionally, whereby the parties undertook to enter into good faith negotiations with third parties in order to eliminate the potential threat towards innovation through the loss of competition between the leading firms in the relevant market.[453] Therefore, it can be stipulated that the Commission had already started, almost 30 years ago, to evaluate the effects of mergers on innovation, by way of assessing the transactions in which the parties' product development activities play an important role in supply and where the dynamics of the relevant market are largely determined by innovation competition. However, even though innovation was accepted as a competitive parameter, there were no specific comprehensive regulations to determine how the effects on innovation should be analyzed in merger reviews,[454] and even today, no such regulations exist.

In the traditional merger control approach, the assessment of the impact of mergers on innovation, for transactions in which the parties were current or potential competitors to one another, was limited to the principles outlined under paragraph 38 of the Horizontal Merger Guidelines.[455] As per the guideline, a proposed transaction may give rise to a significant impediment of effective competition in the relevant market in cases where there are competing undertakings with innovation capabilities and pipeline products. In fact, due to the lack of an established framework of analysis for harm to innovation, the example provided under HMG has played a determinant role in shaping the Commission's approach towards innovation in its merger control reviews.[456] Therefore, in line with the paragraph 38 of the HMG,

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at paras. 8, 38, *available at* https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52004XC0205(02)&from=EN.
[451] Petit, (2018) *supra* note 369 at 9.
[452] DuPont/ICI., European Commission Decision No. Case No IV / M.214 (1992).
[453] *Id.* at para. 48.
[454] Todino M., Van De Walle, G. & Stoican, L., *EU Merger Control And Harm To Innovation—A Long Walk To Freedom (From The Chains Of Causation)* THE ANTITRUST BULLETIN - SAGE JOURNALS 64 1 (2019): 11-30 at 5.
[455] *Id*.
[456] *Id*.

transactions in which pipeline products of a merging party overlap with the existing ("pipeline-to-existing overlap") or pipeline products of the other merging party ("pipeline-to-pipeline overlap") are the cases in which the Commission has traditionally set forth theories of harm related to innovation.[457] In this sense, the product-markets where the companies that are not yet present in a given sector, but are nevertheless potential competitors due to their pipeline products, have been carefully examined by the Commission. Therefore, the Commission had, effectively, evaluated the impacts on innovation within the framework of potential competition, as regulated under paragraph 60 of the HMG.[458]

According to paragraph 60 of the HMG, in order for a merger with a potential competitor with a pipeline product to have anti-competitive effects in a relevant product-market, the following two conditions must be fulfilled: (i) the potential competitor should either already exert a significant competitive constraint over the existing product of the other party, or there should be a significant likelihood that it will enter into the market in a relatively short period of time, which would result in the relevant competitor being able to constrain other existing companies in the relevant market, and (ii) there should not be a sufficient number of other potential competitors that could ensure the maintenance of competitive pressure over the merged company.[459]

In this context, while reviewing the harm to innovation in mergers, the Commission has looked into and evaluated certain vital features, which are mainly related to the other conditions set forth for the assessment of the potential competition.

4.2 Key Features of the Traditional Approach to Innovation in the Commission's Precedents

a. The Commission's Theories of Harm Related to Innovation Were Traditionally Tied to a Specific Product-market.

[457] Mosso, (2018) *supra note* 162 at 6.
[458] *Id*.
[459] De Coninck R., "Innovation in EU Merger Control: in need of a consistent framework." *Competition Law and Policy Debate* 2 3 (2016): 41-51.

Paragraph 38 of the HMG refers to a specific product-market for assessing the merger's impact on effective competition through innovation. In this regard, the Commission has traditionally analyzed the harm to innovation about a clearly defined product-market, in order to determine whether a merger with a potential competitor would give rise to a significant anti-competitive effect.[460] In EU competition law, above all else, defining the borders of the relevant market is utilized as a crucial instrument for understanding the anti-competitive effects of a merger, including the potential harm to innovation.[461]

Therefore, the Commission's traditional approach to innovation is founded on the analysis of a clearly delineated relevant market.[462] The relevant market definition is deemed as a crucial step for analyzing the scope of the competitive landscape and for identifying the relevant (potential) competitors.[463] Even though innovation is not a static competitive parameter (like price, quality, and output), innovation competition has been assessed by reference to R&D activities that are specifically tied to well-defined current or future product-markets, in terms of the Commission's traditional approach.

For instance, in its *Pasteur-Mérieux/Merck*[464] decision, the Commission evaluated the anti-competitive concerns related to innovation based on a product-market that was defined according to the parties' overlapping late-stage pipeline vaccine products. The decision was related to the establishment of a joint venture between two pharmaceutical companies, Pasteur and Merck, which operated in the research and development of a series of vaccines. The transaction was envisaged and structured in a way to ensure that the parties would remain autonomous in their R&D decisions; however, as the joint venture would establish a development committee, the Commission considered that this committee could potentially lead to the diminishment of the parties' R&D activities for future pipeline products related to the

[460] Petit, (2018) *supra* note 369 at 12.
[461] Suijkerbuijk, L. I. M., Innovation Competition in EU Merger Control (2018) (on file with the Tilburg University) at 10 *available at* http://arno.uvt.nl/show.cgi?fid=145944.
[462] Petit, N., (2018) "Innovation Competition, Unilateral Effects and Merger Control Policy", Mimeo, *available at* SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3113077 at 12.
[463] Suijkerbuijk, L. I. M., Innovation Competition in EU Merger Control (2018) (on file with the Tilburg University) at 10 *available at* http://arno.uvt.nl/show.cgi?fid=145944.
[464] Pasteur Mérieux/Merck., European Commission Decision No. Case IV / 34.776, (1994).

vaccine market, through coordination.[465] Therefore, the Commission focused its competitive assessment in this case on a specific (future) product-market, namely, the pipeline products in monovalent vaccines, and evaluated the parties' positions therein.[466] Nevertheless, even though the Commission mentioned its concerns regarding the possibility of a decline in the parties' R&D activities in the post-merger market, it eventually approved the transaction in question after analyzing the particular dynamics of the vaccine market. In this regard, the Commission found that coordination would require significant investment and time for research and that it involved certain risks stemming from the difficulty of launching successful products into the market, and also took into account the efficiencies that the merger would bring.[467]

In its *Ciba/Sandoz* decision, the Commission once again defined (future) product-markets for the assessment of concerns related to R&D potential and innovation, in the merger between Ciba and Sandoz, which would result in the formation of a new undertaking called Novartis.[468] Ciba and Sandoz were two companies that operated in the research, development, and production of active chemical substances, as well as the production and marketing of pharmaceutical products.[469] Before assessing the merger's potential effects on innovation, under its decisional practice, the Commission first determined the overlapping activities of the parties, as follows: healthcare products, crop protection products, animal health products, and seeds.[470] Because the affected markets were all related to the pharmaceuticals industry, the decision was, "*a full assessment of the competitive situation requires examination of the products which are not yet on the market but which are at an advanced stage of development.*"[471] Therefore, the (future) relevant product-markets were defined by taking into account the innovation progress of the parties' overlapping activities. Most importantly, in order to assess the anti-competitive concerns arising from the future competitive advantage that would be attained from the current R&D and innovation potential of the parties in the future markets, it was indicated in the decision that, "*as*

[465] *Id.* at para. 64.
[466] Pasteur Mérieux/Merck., European Commission Decision No. Case IV / 34.776, (1994).
[467] *Id.* at para. 64, 82-101.
[468] Ciba-Geigy/Sandoz. European Commission Decision No. Case IV/M.737 (1996).
[469] *Id.* at para. 53.
[470] *Id.* at para. 10.
[471] *Id.* at para. 42.

research and development must be assessed in terms of its importance for future markets, the relevant product-market must, by its very nature, be defined in a less clear-cut manner than in the case of existing markets."[472]

In this regard, in terms of the theories of harm related to innovation in future markets, the Commission's traditional assessment in this decision suggests that the transaction could not lead to the creation or strengthening of a dominant position, considering that the products in future markets contain uncertainties related to the process of patent applications.[473] In addition, the dynamics of the clearly defined market that were taken into account by the Commission, in this case, were as follows: (i) rapid successions of new products, (ii) market share fluctuations, (iii) the large number of competitors with significant R&D capacities, (iv) a large number of product launches, (v) the convenience of entries to and exits from all the markets concerned, and (vi) the countervailing power of wholesalers.[474] Rather than assessing the static indicators of competitive strength (such as the relative market shares of the parties), the Commission evaluated the dynamic elements of the futures markets, such as the R&D capabilities of the merging parties and their competitors.[475] Therefore, the Commission ultimately cleared the transaction solely based on the commitments undertaken by the parties with regard to animal health products, which involved granting licenses to third parties with fair terms, to be monitored by the Commission via the submission of quarterly reports with regard to license requests received from third parties, licenses granted/refused and the grounds for such refusals, in order to secure the maintenance of the third parties' presence in the relevant market.[476]

This decision reveals different traits (*i.e.,* a shift) in the Commission's thinking than in earlier examples, where the Commission had focused mainly on the competitive strength that would be gained by the merging parties through their overlapping pipeline products. This trend would continue in the Commission's *Glaxo Wellcome /*

[472] *Id.* at para. 44.
[473] *Id.* at para. 105, 100-107.
[474] *Id.* at para. 176.
[475] Suijkerbuijk, L. I. M., Innovation Competition in EU Merger Control (on file with the Tilburg University 2018) *available at* http://arno.uvt.nl/show.cgi?fid=145944 at 26.
[476] Ciba-Geigy/Sandoz, European Commission Decision No. Case IV/M.737 (1996) at para. 280.

SmithKline Beecham decision,[477] in which the Commission put greater emphasis on the potential effects of the transaction on the overall R&D activities in the sector.[478] The relevant decision concerned the establishment of GlaxoSmithKline through the merger between Glaxo Wellcome ("*GW*") and SmithKline Beecham ("*SB*"). While both parties were active in human pharmaceuticals, SB was also involved in conducting activities related to vaccines, OTC products, and healthcare-related products. The impact on "R&D markets" was once again evaluated with respect to the defined product-markets, which were determined on the basis of overlapping existing and pipeline products, as follows: asthma/COPD Chronic Obstructive Pulmonary Disease" ("COPD"), anti-migraine (N2C), therapeutic vaccines, and other urological products, including antispasmodics (G4B).[479] The fields in which neither of the parties had an existing product, but only had pipeline products, were diabetes (A10B), oncology (L1)m and irritable bowel syndrome. In this case, the Commission analyzed whether there would be a reduction in the "overall R&D potential," specifically in relation to the development of treatments for COPD.[480] However, the Commission decided that a reduction in overall R&D activities in the sector through the removal of R&D activities of the merging parties would not be expected since there was substantial "*unmet clinical need in this segment*,"[481] which was regarded as a commercial opportunity and thus considered to be attractive for companies. In addition, as the second condition of paragraph 60 of the HMG requires a lack of significant number of competitors in the market for anti-competitive effects to arise from a merger with a potential competitor, the Commission also took into consideration that the existence of a large number of pipeline products of third parties would serve as a driving force for the parties to continue their R&D activities in the future as well.[482]

Another example of Commission's traditional approach on the theories of harm related to innovation tied to specific current product and future markets is the

[477] Glaxo Wellcome / SmithKline Beecham. European Commission Decision No. Case COMP / M.1846 (2000).
[478] Petit, (2018) *supra* note 369 at 37.
[479] Glaxo Wellcome / SmithKline Beecham. European Commission Decision No. Case COMP / M.1846 (2000), at para. 150.
[480] Glaxo Wellcome/SmithKline Beecham. European Commission Decision No. Case COMP / M.1846 (2000), at para. 179-188.
[481] *Id.* at para. 187-188.
[482] Suijkerbuijk, L. I. M., Innovation Competition in EU Merger Control (on file with the Tilburg University 2018) *available at* http://arno.uvt.nl/show.cgi?fid=145944 at 27.

Bayer/Aventis Crop Science[483] case, which was related to the transaction concerning the acquisition of Aventis by Bayer. In that decision, the Commission's concerns were focused on the diminishment of innovation in the relevant market due to the loss of competition between the merging parties, which had robust programs in R&D and innovation.[484] The Commission analyzed the potential impact of the transaction on the "R&D capabilities and incentives" of the parties, regarding "current product-markets and future product-markets," which were determined to be the markets for crop protection, professional pest control, and animal health products, based on the overlapping activities of the parties.[485] The Commission acknowledged that innovation was an essential ingredient for market growth and that extensive capital resources were required due to the costly nature of R&D investments in this sector. The parties would become one of the largest undertakings in the industry, in terms of R&D capabilities, post-merger; therefore, by taking a step further, the Commission decided to evaluate the post-merger R&D conduct, organization, and strategy of the parties in this case.[486] The Commission's concerns were based on the assessment that, due to their successful pipeline products, the potential increase in profits, and the accumulated know-how to be brought about by the transaction, the new entity would emerge as one of the few companies in a leading position for launching new products.[487] Therefore, due to the significance of innovation for enabling players to remain in the market and the high barriers to entry arising from sizeable R&D costs, this transaction raised concerns with regard to the potential elimination of future competition in current product-markets as well as future markets.[488] Consequently, the Commission decided to approve the transaction based on a set of full commitments from the merging parties, including the divestitures of several businesses and brands, thereby eliminating the competition concerns arising from the overlaps between the parties' activities and products. The Commission considered that these divestitures would result in new entries to the relevant market, thus promoting and enhancing competition.

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[483] Bayer /Aventis Crop Science, European Commission Decision No. Case COMP/M.2547 (2000).
[484] *Id.* at para. 18.
[485] *Id*.
[486] Petit, (2018) *supra* note 369 at 10.
[487] Bayer/Aventis Crop Science. European Commission Decision No. Case COMP/M.2547 (2000) at para. 153.
[488] *Id.* at para. 18.

In its *Syngenta / Monsanto's Sunflower Seed Business* decision,[489] the Commission evaluated the innovation concerns arising from the possible foreclosure effects of the proposed transaction, by defining clear-cut upstream and downstream markets. The decision concerned the transaction related to the acquisition of Monsanto's sunflower seed business by Syngenta, where both of the parties were active in the breeding and trading of new varieties of sunflower (that is, sunflower hybrid seeds and parental lines), as well as the commercialization of sunflower hybrid seeds. Contrary to the parties' stated position regarding the definition of an overall market, the Commission indicated that a distinction should be made between (i) the upstream market for the trading (*i.e.,* the exchange and licensing) of varieties (parental lines and hybrids), and (ii) the downstream market for the commercialization of hybrids.[490]

In line with its decisional practice in the cases discussed above, the Commission evaluated the potential harm to innovation in the relevant market that would arise from (i) the removal of Monsanto, one of the most important innovators with significant R&D capabilities in the breeding and trading of new sunflower varieties, and (ii) the removal of the competitive constraint that Monsanto was exerting on Syngenta and on other competitors, which fostered the market players' incentives to compete by launching new and improved products.[491] That said, we observe that this decision also evinced certain different traits (and a shift in the Commission's decisional practice), when compared to the preceding cases. This shift stemmed from the fact that the elimination was based on its adverse effects on prices, innovation, and access to external germplasm in the downstream market.[492] Therefore, since actual and potential competitors would not be able to access Monsanto's important and large germplasm portfolio (which had been developed and expanded through innovative products) in the aftermath of the merger, the Commission assessed that the transaction would lead to a foreclosure in the

[489] Syngenta/Monsanto's Sunflower Seed Business. European Commission Decision No. Case No COMP / 5675 (2010).
[490] *Id.* at para. 76.
[491] *Id.* at para. 321.
[492] Joaquín Almunia, Commission Vice President in charge of Competition Policy, stated that: "*Syngenta has offered significant remedies to ensure that the transaction will not hamper the development of new sunflower varieties in the EU, or increase prices or reduce customers' choice of sunflower seeds in Spain and Hungary.*" European Commission, Press Release (Nov. 17, 2010)*, available at* http://europa.eu/rapid/press-release_IP-10-1515_en.htm , at para. 2.

downstream market due to the loss of innovation. According to the Commission, this foreclosure effect in the downstream market would ensure that Syngenta would have the leading position in that market.[493] Due to the harm to innovation, especially in the downstream market, which would ultimately result in a reduction of options for sunflower seed hybrids for customers,[494] the Commission conditionally cleared the transaction based on a set of commitments from the parties. These commitments concerned (i) the divestment of Monsanto's hybrids commercialized in Hungary and in Spain in the previous two years, as well as the hybrids already under official trial for registration in those countries, and (ii) Monsanto's parental lines used to develop these hybrids, as well as the pipeline parental lines currently under development with the aim of producing hybrids for the Spanish and Hungarian markets.[495] The competitive concerns arising from the removal of innovation were thereby eliminated through these commitments since a third player would take over the competitive role exercised by Monsanto before the merger. The commitments which included the rights to use, cross breed the parent lines and also commercialize and license the resulting hybrids, would also be extended to the foremost sunflower growing European countries that were outside the EU such as Russia, Ukraine and Turkey. This would allow the divested business to be sustainable and competitive in the long term, as well as showing genuine effort on part of the transaction parties in giving these commitments.

In addition to the assessment of innovation in the relevant markets related to pharmaceutical and crop protection products, the Commission has also evaluated innovation competition in other R&D driven markets, particularly in its *Seagate/HDD Business of Samsung*[496] and *Western Digital/Viviti Technologies*[497] decisions. In these decisions, the transactions concerning the acquisition of Samsung's HDD business by Seagate and the acquisition of HGST by Western Digital were evaluated. Taken together, after the completion of Seagate's acquisition of

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[493] Syngenta/Monsanto's Sunflower Seed Business. European Commission Decision No. Case No COMP / 5675 (2010) at para 246, 253.
[494] European Commission, Press Release (Nov. 17, 2010), *available at* http://europa.eu/rapid/press-release_IP-10-1515_en.htm , at para. 4.
[495] *Id*. at para 1.
[496] Seagate/HDD Business of Samsung, European Commission Decision No. Case COMP/M.6214 (2011).
[497] Western Digital Ireland/Vivity Technologies, European Commission Decision no. Case M.6203 (Nov. 23, 2011) at para. 486, 533, 699.

Samsung's HDD business and Western Digital's acquisition of HGST, there would only remain three suppliers on the 3.5" desktop market and four suppliers on the 2.5" mobile market, respectively. In the *Seagate/HDD Business of Samsung* decision, the Commission reviewed the parties' positions in the relevant market while evaluating the potential impact of the transaction on innovation. There was no evidence that Samsung was a price leader, nor had it been consistently the first to introduce a new product in the last decade – it was not a significant innovator. As a result, the Commission found that Samsung was not a particularly strong competitor, but rather a "trend follower," [498] which, in turn, lead to the conclusion that innovation would not be harmed.[499]

On the other hand, in the *Western Digital / Viviti Technologies* decision, the Commission did not consider that the merger would produce significant effects on innovation in the market. Instead, it assessed the merger's adverse effects on prices due to the dominant position held by Western Digital through its extensive product and IP-rights portfolios.[500] In this respect, the parties to the transaction claimed innovation efficiencies in terms of higher and faster product development, as the combined entity would strengthen and increase their R&D resources. However, the Commission found that the respective dynamic efficiency claims were not verifiable since these claims were not only general and unspecific in nature, but also they lacked the quantitative evidence that would allow their credibility to be assessed within the framework of the criteria utilized for efficient defenses.[501] As a result, the Commission conditionally cleared the transaction, subject to the divestiture of essential production assets for the manufacture of 3.5-inch HDDs, including a production plant, the licensing of the IP rights used by the divested business, the transfer of personnel, and the supply of HDD components to the divested business.[502]

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[498] Seagate/HDD Business of Samsung, European Commission Decision No. Case COMP/M.6214 (2011) at para. 425, 448.
[499] *Id*. at para. 427.
[500] *Id*. at para. 84
[501] *Id*. at para. 1007.
[502] European Commission, Press Release (Nov. 23, 2011), *available at* http://europa.eu/rapid/press-release_IP-11-1395_en.htm at para. 5.

b. The Commission's Theories of Harm Related to Innovation Were Traditionally Concerned with the Transaction Parties' Phase III Pipeline Products, Rather Than the Pipeline Products at Earlier Stages of Development.

The above examples of the Commission's case-law aim to demonstrate that its traditional theories of harm related to innovation have been mostly tied to clearly defined (current and future) product-markets. It is also evident from specific examples (as provided below) that the theories of harm that were developed in the scope of its merger control assessments were solely limited to the pipeline products at the later stages of development, meaning that they were on the verge of being released to the relevant market.[503] In this regard, the Commission sought to obtain solid and reliable evidence which would demonstrate that the potential competitor would become a capable, competitive force in the relevant market(s), in order to determine whether there was a "significant likelihood" of entry into the market, as required under paragraph 60 of the HMG. As the scope of this assessment, the Commission considered that the competitors with pipeline products in the earlier stages of development (*i.e.,* Phase I and Phase II) could not potentially exercise significant competitive constraints on others since the prospects of success of the new pipeline products remain uncertain.[504] The Commission also noted that, even if the Phase I and Phase II pipeline products indeed turned out to exert a significant competitive force in the future, the theories of harm related to such products cannot possibly be set forth during the time that the transaction is subject to the Commission's review, since any evidence at that stage would be inadequate and inconclusive for determining a significant impediment to competition.[505]

In this regard, the *Medtronic/Covidien* decision, which was related to the merger of two pharmaceutical companies, Medtronic and Covidien, is worth examining. In that case, the Commission evaluated the anti-competitive concerns related to the market for drug-coated balloons to treat vascular diseases, since Medtronic held a leading position in this market and Covidien had a pipeline product at a later stage, which was very likely to pose a significant competitive constraint on Medtronic in the

[503] Todino M., *et al*., *supra* note 454, at 6; Seiler, (2018) *supra* note 132.
[504] Todino *et al., supra note* 503, at 16.
[505] *Id*., at 16-17.

relevant market.[506] Based on this state of affairs, the Commission approved the relevant transaction subject to the commitments relating to the divestiture of the late-stage pipeline product, together with all assets and personnel required for releasing the product to the market.[507] Similarly, in *Pfizer/Hospira,* the Commission approved the transaction based on a commitment that Pfizer would divest certain sterile injectable drugs and its promising infliximab biosimilar pipeline drug.[508]

Some decisions by the Commission, such as *Pasteur-Mérieux/Merck and Glaxo Wellcome/SmithKline Beecham*, constitute historical examples in which the theories of harm related to innovation were concerned with the pipeline products at a later stage of development (*i.e.,* Phase III) and did not extend to pipeline products in the earlier stages. The Commission has insisted on the same approach in more recent examples as well, such as *Medtronic/Covidien*[509] and *Pfizer/Hospira*,[510] even though the Commission's assessments therein also embody specific signals and indications of its gradual transition from the traditional theory to the novel theory, which is detailed further below.

It is important to note in these as well as many other cases, the Commission has relied upon the parties` internal documents to assess any potential harm to innovation, especially with regard to their plans on the target`s pipeline products. For example, in *GE/Alstom*[511] the evidence garnered from internal documents indicated GE had been planning to forego the Alstom pipeline products[512] and accordingly this was one of the divestment commitments the parties offered to the Commission for the conditional approval.[513] Indubitably, internal documents can provide insight into the parties` strategic plans and post-merger assessments; and also help the Commission "make better decisions, and understand the markets and companies'

[506] Seiler, (2018) *supra* note 132 at 33-34,
[507] European Commission, Press Release (Nov. 28, 2014)*, available at* http://europa.eu/rapid/press-release_IP-14-2246_en.htm , at para. 4.
[508] Pfizer/Hospira, European Commission Decision No. Case COMP/ M.7559 (2015).
[509] Medtronic/Covidien, European Commission Decision No. Case COMP/ M.7326 (Nov. 28, 2014).
[510] Pfizer/Hospira, European Commission Decision No. Case COMP/ M.7559 (2015).
[511] GE/Alstom, European Commission Decision No. Case COMP/ M.7278 (2015)
[512] Kuhn, T. *EC focus on internal documents: Time to rethink the architecture of the EU merger control process?* (Mar. 8, 2019) *at* https://www.whitecase.com/insight-our-thinking/ec-focus-internal-documents-time-rethink-architecture-eu-merger-control
[513] European Commission, Press Release (Sept 8, 2015) Commission clears GE's acquisition of Alstom's power generation and transmission assets, subject to conditions at https://ec.europa.eu/commission/presscorner/detail/en/IP_15_5606

plans for the future."[514] However they do have other shortcomings, which makes any strict reliance on them the subject of criticism.[515]

c. In Symmetry with the Evaluation on the Transaction Parties' Phase III Pipeline Products, the Commission's Theories of Harm Related to Innovation Were Also Traditionally Concerned with Third Parties' Phase III Pipeline Products.

Under the EU merger control regime, another significant factor in the assessment of whether a proposed transaction would give rise to a significant impediment to competition, is the availability of competitors who would be able to exert competitive pressure on the transaction parties. Under the second leg of the assessment provided under the paragraph 60 of the HMG, the Commission takes into account whether there is a sufficient number of competitors in the relevant market when developing its theories of harm related to innovation. In this assessment, the Commission also evaluates the competitive pressure exerted by the late-stage pipeline products of third parties, in addition to the transaction parties' late-stage pipeline products. Therefore, arguably, the Commission adopts a symmetric approach in terms of the pipeline products of both the transaction parties and third parties, giving equal footing to the competitive pressure exerted by the third parties' pipeline products.[516]

The *Johnson & Johnson/Guidant*[517] case constitutes one of the most illuminating examples in which the Commission adopted a symmetric approach in terms of the assessment of the competitive pressure exerted by the transaction parties' and third parties' pipeline products. This decision was related to the acquisition of Guidant, a company specializing in cardiovascular medical products, by Johnson & Johnson ("J&J"), a healthcare group active in the development, production, and sale of vascular medical devices. In line with the parties' overlapping activities and the market conditions, the Commission focused in its examination on the theories of harm related to three major areas: (i) coronary drug-eluting stents (DES) and

[514] Vestager, M., "'Fairness' in Competition Law and Policy: Significance and Implications". (Speech in Brussels: GCLC Annual Conference, 25 January 2018
[515] *See* below in Section 5 for analysis of Commission`s use of internal documents in *Dow/Dupont.*
[516] Todino *et al., supra note* 503, at 7.
[517] Johnson & Johnson/Guidant, European Commission Decision No. Case COMP/M.3687 (2005).

accessories, (ii) endovascular stents, and (iii) accessories used in peripheral arteries and devices used in cardiac surgery.[518] The Commission determined that the market for drug-eluting stents was concentrated, with only one other major supplier (namely, Boston Scientific) and several imminent entrants, such as Guidant, Medtronic, and Abbott, which had pipeline products in Phase III of the development stage.[519] In this regard, since Guidant was a significant potential competitor, the Commission evaluated that Guidant's removal from the market would give rise to a substantial loss of competition in the relevant market. The Commission also found that there were equally credible "potential" competitors about to enter the market with their late-stage products, which were expected to act as significant competitive constraints on J&J.[520] This finding enabled the Commission to assess that there were no theories of harm in terms of innovation that were specific to the relevant product-market in question. Moreover, the commitments provided by the parties were related to other affected markets that were unrelated to the foregoing assessment.[521]

d. The Commission's Theories of Harm Related to Innovation Were Traditionally Set Forth Based on an Abundance of Evidence, Setting the Standard of Proof Considerably High.

Further to the above, the Commission's methods and tactics regarding standard of proof also show elements of the traditional approach. Initially, the standard of proof is relevant to the quality of the evidence that the Commission needs to adduce when building its case towards a clearance, a conditional clearance, or a prohibition.[522] In the field of merger control, the Commission has traditionally enjoyed a wide margin of discretion, especially due to the role of economic analysis in the assessment of the level of concentration and harm to innovation.[523] To that end, the standard of proof sought out by the Commission is most clearly visible in the *Tetra Laval v Commission* decision, wherein it was declared that the Commission should be able to show that: "*[t]he evidence relied on is* ***factually accurate, reliable and***

[518] European Commission, Press Release (Aug. 25, 2005) *available at* http://europa.eu/rapid/press-release_IP-05-1065_en.htm at para. 4.
[519] *Id*. at para. 15.
[520] Johnson & Johnson/Guidant. European Commission Decision No. Case COMP/M.3687 (2005) at paras. 129, 165.
[521] European Commission, Press Release (Aug. 25, 2005) at para. 7, *available at* http://europa.eu/rapid/press-release_IP-05-1065_en.htm .
[522] Todino *et al., supra note* 503 at 29.
[523] *Id*. at 38.

consistent *but also whether that evidence contains all the information which must be taken into account in order to assess a complex situation and whether it is capable of substantiating the conclusions drawn from it."*[524] (Emphasis added.)

In *Tetra-Laval/Sidel*,[525] the Commission prohibited the proposed transaction between Tetra Laval and Sidel, which were both active in the packaging business, due to the competitive advantages that the merged entity would enjoy vis-à-vis its competitors.[526] As for the innovation's harm, the Commission determined that innovation would be diminished in the post-merger market due to the decrease in Tetra's incentives for innovation. After the decision was appealed to the General Court, the General Court indicated that the Commission had not been able to show why the demand would be discontinued in the post-merger market. Considering that the demand in question is the driving force that provides the impetus for future innovation, especially in the aseptic carton markets,[527] the lack of analysis in this respect also taints the Commission's conclusion regarding the diminishing of innovation. Furthermore, the decision was also criticized by the General Court for failing to discuss why the capacity and activities of Tetra's competitors were deemed to be irrelevant, and the General Court found that the contested decision did not establish that the merged entity would be less incentivized to innovate than Tetra currently was.[528] Following the Commission's appeal of the General Court's decision before the European Court of Justice ("ECJ"),[529] the ECJ noted that, since the merger control review relies on (ex-ante) predictions and forecasts about events which are more or less likely to occur in the future by using the indicators at hand, the prohibition of a proposed concentration should be rendered with more care.[530] Therefore, the ECJ decided that the General Court's position concerning the Commission's failure to demonstrate to the requisite standard of proof that the transaction would cause an impediment to potential competition was, indeed, accurate. Hence, the judiciary's approach, in this case, indicates that, when

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[524] Commission v. Tetra Laval, European Court of Justice, Case C-12/03 P, ECR I-987 (2005) at para. 328.
[525] *Tetra Laval/Sidel,* European Commission Decision No. Case COMP / M.2416 (2001).
[526] *Id.* at para. 385.
[527] *Tetra Laval BV v Commission.* Judgment of the Court of First Instance Decision No. Case T-5/02 (2002), at para 329.
[528] *Id.* at paras 331-332.
[529] Commission v. Tetra Laval, European Court of Justice, Case C-12/03 P, ECR I-987 (2005).
[530] *Id* at para. 42-43; Suijkerbuijk, L. I. M. Innovation Competition in EU Merger Control (on file with the Tilburg University 2018) at 29 *available at* http://arno.uvt.nl/show.cgi?fid=145944 .

assessing a concentration, the Commission should effectively establish the potential harm to innovation by utilizing evidence that is factually accurate, complete, abundant, and consistent. Moreover, these judicial decisions seem to indicate that every single fact on which the Commission bases its case, is expected to be substantiated and verified by the evidence. Advocate General Wahl has stated that the criteria set by the ECJ require the Commission to consider all relevant information and not only the "information in its possession."[531]

In conclusion, within the scope of the traditional approach, shaped by the case law discussed above, the Commission's innovation-based theory of harm is expected to comply with the standard of proof set out in the ECJ's decision. Therefore, the entirety of the relevant information in a merger case needs to be analyzed carefully, which poses a significant challenge to the Commission, considering the already evident complexity of the *ex-ante* assessment of innovation concerns, as exemplified by the decisions examined in this Section.

V. The Gradual Transition to the Novel Theory

Following its use of the traditional methods for assessing innovation in merger cases, as typified by the cases discussed above, the Commission gradually shifted its methodological outlook and began to adopt a new approach for theories of harm surrounding innovation. This approach has been referred to as "*the novel theory of harm*" by various commentators,[532] and it has been criticized from several aspects since it introduces certain ambiguities into the Commission's assessment process that are not yet based on any firm legislative grounds. This gradual transition, ultimately leading up to the seminal *Dow/DuPont* decision, where the novel theory of harm would manifest itself in the most explicit manner, will be elucidated below by way of examining a number of cases that involved the transaction parties taking specific measures in order to eliminate the Commission's concerns relating to the significant impediment to effective innovative competition.

[531] Petit, (2018) *supra* note 369 at 39.
[532] Todino *et al., supra* note 503 at 1.

The Commission's traditional theories of harm had been based on the analysis of several key factors and embodied certain principles, including the following (among others):

(I) The theories of harm in terms of innovation, related to the consummation of a transaction, must be concerned with "*late-stage pipeline products*."[533] Therefore, the marketing of the innovative product subject to the potential theories of harm generally occurs in a foreseeable and short period of time, *i.e.,* at most within two or three years.[534]

(II) The theories of harm were concerned with the R&D activities within the product-markets that had been concretely defined by the Commission.[535] That is to say, "*innovation competition was systematically assessed by reference to current or future downstream product-markets, as opposed to upstream innovation spaces/markets."*[536]

(III) The standard of proof required to establish that the transaction in question raised concerns in terms of inhibiting innovation, was set particularly high.[537]

(IV) The Commission's conduct for assessing potential competitive pressure exerted by third parties and the potential competition stemming from the transaction parties was "*symmetrical*"[538]; in other words, the same parameters were implemented, rather than using different criteria.

The most prominent and controversial step towards the Commission's transition to the novel theory, in which the Commission visibly abandoned and substantially revised its earlier approach to its traditional theories of harm is the *Dow/DuPont*[539] case, which was concerned with the merger of two significant crop protection chemicals suppliers. In a nutshell, the Commission's decision showed that "*the novelty would come from the fact that the analysis does not relate to markets in the traditional sense. The analysis would also move away from how constraints coming*

[533] *Id*. at 2.
[534] *Id*. at 10.
[535] Petit, (2018) *supra* note 369.
[536] *Id*.
[537] Todino *et al., supra* note 503 at 15.
[538] *Id*. at 7.
[539] Dow/DuPont, European Commission Case M.7932 (Mar. 27, 2017)

from potential competitors were considered."[540] However, it has also been argued that the transition in the Commission's approach leading up to *Dow/DuPont*, and the gradual evolution of its traditional theories of harm, were also observable in earlier cases to a certain extent, when some of the Commission's prior decisions are examined. Accordingly, before delving into a detailed assessment of the *Dow/DuPont* case, such examples will be identified and discussed in the sections below.

Medtronic/Covidien[541]

The *Medtronic/Covidien* decision concerns the merger of two suppliers that are active in the medical devices sector, in which Medtronic holds a leading position in the market for drug-coated balloons to treat vascular diseases. The Commission found that there were few competitors active in this market and that they exerted limited competitive pressure on Medtronic. The target company, Covidien, had a promising late-stage pipeline product, a drug-coated balloon called "Stellarex."

The Commission considered the promising clinical trial results of Stellarex, and thereby evaluated that Covidien would have competitively constrained Medtronic in the near future. Therefore, the consummation of the transaction was considered to eliminate a credible competitor and reduce innovation in this area.

In order to address these concerns, Medtronic committed to selling Covidien's worldwide Stellarex business, including, in particular, the relevant manufacturing equipment, related IP rights, and scientific and regulatory materials necessary to complete the Stellarex trials, along with the key personnel. These remedies would provide the purchaser with all the assets required to bring Stellarex to the market. Consequently, in January 2015, Spectranetics Corporation completed the acquisition of Covidien's late-stage pipeline product, Stellarex.

This decision is quite pertinent and illuminating with regard to the gradual transition in the Commission's approach, in the sense that it shows that the Commission relies

[540] Colomo, P. I., "Competition Law and Innovation Where Do We Stand." *Journal of European Competition Law & Practice* 9 9 (2018): 561-562.
[541] Medtronic/Covidien, European Commission Decision No. Case COMP/ M.7326 (2014).

to a significant extent on the internal documents collected from the parties in order to assess the transaction and set forth its theories of harm, in particular for innovation concerns.

In its decision, the Commission notes that Medtronic treats Bard, who was indicated by the market respondents to have the drug-coated balloon that was the most suitable/similar alternative to Medtronic's product (and therefore, regarded as Medtronic's closest competitor in terms of product characteristics and price),[542] as being the only other competitor with comparable clinical data to Medtronic.[543] Along the same lines, both Bard itself and the target company Covidien believed that Bard had a "good product with strong clinical evidence"[544] and was "a competitor with a sizeable presence on the DCB market." In terms of the target Covidien's product Stellarex, the Commission initially referred to several key opinion leaders' statements, indicating that Covidien's drug-coated balloon and Medtronic's drug-coated balloon could not be subject to any comparison at this stage of development since there was no sufficient clinical data. Subsequently, the Commission also mentioned and took note of the individual opinions of a few surgeons, who indicated that Covidien's product "tends to be a better product as, compared to Medtronic's device, it has a homogenous drug coating on the balloon" and "Stellarex is similar to Medtronic's DCB," and that it "might be the 'best and safest' coming close to Medtronic's DCB."[545]

Finally, the Commission declared that:[546]

> "*Once Medtronic acquires Covidien,* ***it appears from Medtronic's internal planning*** *that it is expected that the development of Covidien's product will be put to an end. This means that the Transaction will have as an effect elimination of a serious future competitor as a result of which DCB patients will be deprived of an innovative and potentially a very effective device.*
>
> *Based on the above, the elimination of Covidien's pipeline product following the proposed Transaction will result in the loss*

[542] *Id.* at para. 211.
[543] *Id.* at para. 216.
[544] *Id.* at para. 217.
[545] *Id.* at para. 236.
[546] *Id.* at paras. 247-249.

> *of a credible competitor which absent the Transaction would likely have constrained Medtronic on the market for drug-coated balloons in the EEA, where Medtronic is currently the market leader. Furthermore, the Commission considers that the players that are currently on the market would not exert sufficient competitive pressure on the merged entity post-Transaction. In addition, the Transaction will also have a significant effect on innovation in these markets as Covidien had the ability and incentive to continue innovation by further investing in clinical trials and developing Stellarex into a strong contender on the market including for indications for which Medtronic's device is not currently approved."* (Emphasis added.**)**

The Commission's above analysis, which concludes that Covidien's product exerts significant competitive pressure on Medtronic, was based on the opinions of a few surgeons and the parties' internal documents. It has been argued that this position differs significantly from the Commission's approach in the *J&J/Guidant* case (which was also related to cardiovascular devices and exhibited a resemblance to the *Medtronic/Covidien* transaction in terms of the sector), since, in *J&J/Guidant*, "*abundant evidence about clinical trials and availability of angiographic parameters proved the prospect of success of the target and the other pipeline products*,"[547] and the Commission even disregarded the portion of the opinions that indicated that there was no clinical evidence to prove that the pipeline product of the target company was actually efficient.[548]

Novartis/GSK[549]

The *Novartis/Glaxo Smith Kline's Oncology Business* transaction was concerned with the acquisition of a portfolio of GSK's oncology products by Novartis. The Commission noted that, by way of this transaction, Novartis and GSK would be able to combine the clinical research drugs for the same type of cancer, which they had been independently pursuing before to the application.[550] In this regard, the Commission found that:

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[547] Todino *et al., supra note* 503 at 8.
[548] *Id*.
[549] Novartis/Glaxo Smith Kline's Oncology Business. European Commission Decision No. Case COMP M.7275, (2015).
[550] *Id*. at para. 98.

> "[B]oth GSK and Novartis have ongoing Phase I and Phase II clinical trials to investigate the potential use of their MEK and B-Raf inhibitors, either as monotherapies or in combination, in a number of other types of cancer, notably colorectal cancer, non-small-cell lung cancer (NSCLC) and advanced melanoma brain metastases. Novartis also has an on-going Phase III clinical trial for the use of its MEK inhibitor in uveal melanoma."[551]

In particular, for B-Raf and MEK inhibitors, which were the focal points for both of the parties' clinical research programs, the Commission's concerns were related to the possibility that (i) the number of companies developing and marketing such products would be reduced from three to two (the other one being Roche), and (ii) innovation in the market would be reduced, since Novartis might be likely to cease its broader clinical program for the development of the relevant inhibitors after the transaction.[552]

This decision has arguably made a significant impact in terms of the development of the Commission's approach to the theories of harm relating to innovation concerns, since its assessments had traditionally been limited to pipeline products in the advanced stages of development, referred to as "Phase III" of the process, as explained in previous sections. However, in the *Novartis/GSK* transaction, the Commission also expressed competition concerns relating to Novartis's pipeline products at earlier stages of development (*i.e.,* Phase I and Phase II), and looked at all phases of clinical research in its assessment of the case. Furthermore, the Commission chose to take this approach despite the parties' statements that Phases I and II of the clinical trials could not provide reliable indicators in terms of the assessment, as they remain uncertain (i) in terms of understanding the future market conditions, and (ii) with respect to the indications or lines of treatment for which the product in question would be granted approval and released to the market.[553] Consequently, the remedies that were submitted to alleviate those concerns also encompassed the relevant products subject to early clinical trials.[554] In this regard:

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[551] *Id*. at para. 84.
[552] Mirabile I., Pieber M. K., Saurí L. & Stril, A., "Protecting the drugs of tomorrow: competition and innovation in healthcare." *Competition Merger Brief* 2015/2 1-4, at 2.
[553] Novartis/Glaxo Smith Kline's Oncology Business, European Commission Decision No. Case COMP M.7275, (2015), at para. 85.
[554] De Coninck R., "Innovation in EU Merger Control: in need of a consistent framework." *Competition Law and Policy Debate* 2 3 41-51 (2016): 41-42

> "Novartis committed (i) to divest Novartis' B-Raf and MEK inhibitors; (ii) to provide transitional support to ensure completion of the phase III clinical studies trialling these drugs in skin and ovarian cancer; and (iii) to ensure the worldwide development and the EEA commercialisation of the broad clinical research programme relating to the drugs, including clinical studies in colorectal and lung cancer." [555]

It can be reasonably argued that this decision was the first instance in which the Commission has set forth its theories of harm related to innovation separately from a specific product-market,[556] which planted the seeds of (and ultimately led up to) such an assessment in the *Dow/DuPont* decision,[557] since the Commission explicitly notes in its decision that "*a concentration may not only affect competition in existing markets but also competition in innovation and new product-markets,*"[558] and also declares that "*[i]n principle, the effects of a concentration on competition in innovation in this type of situation may not be sufficiently assessed by restricting the assessment to actual or potential competition in existing product-markets*."[559]

Pfizer/Hospira[560]

The *Pfizer/Hospira* transaction was related to the acquisition of Hospira, which supplies injectable drugs and infusion technologies, by Pfizer, a research-based pharmaceutical company that develops innovative medicines for humans. Pfizer was developing a biosimilar for infliximab, which was regarded as a competitor product to Hospira's *Infectra,* the only infliximab biosimilar in the market at the time of the transaction. In addition, only one other undertaking besides Pfizer (namely, Samsung Bioepis) was at an advanced stage in its R&D in terms of developing a competing biosimilar product. The term "biosimilar" refers to drugs that are developed to have the same therapeutic mechanisms as, although not being the exact copies of, patented biological pharmaceuticals. Since patented biological drugs are often deemed to be rather expensive, the aim in developing biosimilars was to

[555] Todino *et al., supra note* 503 at 9-10.
[556] *Id*.
[557] Dow/DuPont, European Commission Case M.7932 (Mar. 27, 2017).
[558] Novartis/Glaxo Smith Kline's Oncology Business, European Commission Decision No. Case COMP M.7275, (2015), at para. 89.
[559] *Id*.
[560] Pfizer/ Hospira, European Commission Decision No. Case COMP/ M.7559 (2015).

decrease the cost of these treatments through the use of such substitute products.[561] The Commission noted that the parties' activities overlapped in human health pharmaceuticals, particularly in the fields of (i) biosimilars, and (ii) specialty injectable pharmaceuticals ("sterile injectables").[562]

As a result of its investigation, the Commission found serious concerns for the biosimilars market, infliximab and the different types of sterile injectables, in certain countries of the European Economic Area ("***EEA***").[563] Despite the arguments regarding the limited availability of clinical evidence,[564] the Commission, once again, significantly relied on the parties' internal documents in reaching its conclusions.[565] The Commission was concerned by the possibility that Pfizer could either delay or discontinue its pipeline product, in order to focus on Hospira's product *Infectra*, "*leading to the net loss of one of only three differentiated biosimilars marketed or in advanced stages of development*,"[566] which would, in turn, lead to the diminishment of innovation competition in the relevant market. The Commission was also worried that, upon the consummation of the transaction, Pfizer could potentially give Hospira's biosimilar back to Celltrion,[567] which could, in turn, eliminate the existing price competition between the relevant undertakings.[568] Therefore, the transaction parties committed to fully divest Pfizer's infliximab biosimilar drug in order to eliminate the Commission's concerns, and Novartis subsequently acquired the biosimilar drug in question in 2016.

This decision was considered to be controversial by commentators, who criticized the Commission for employing a "double standard" in its assessment concerning the potential competition.[569] Critics argued that, in its assessment, the Commission had implemented and applied different standards for the potential competition relating to a third party and the potential competition relating to one of the transaction parties.

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[561] Mirabile I., Pieber M. K., Saurí L. & Stril, A., "Protecting the drugs of tomorrow: competition and innovation in healthcare, *Competition Merger Brief* 2015/2 at 1-4.
[562] Pfizer/ Hospira, European Commission Decision No. Case COMP/ M.7559 (2015), at para. 7.
[563] Pfizer/ Hospira, European Commission Decision No. Case COMP/ M.7559 (2015), at para. 286.
[564] Todino *et al., supra note* 503, at 10.
[565] Pfizer/ Hospira, European Commission Decision No. Case COMP/ M.7559 (2015), at para. 57.
[566] Pfizer/ Hospira, European Commission Decision No. Case COMP/ M.7559 (2015), at 57.
[567] *Infectra* was developed by Celltrion, but co-marketed by Hospira and Celltrion at the time of the assessment.
[568] European Commission (2016) Competition Policy Brief EU Merger Control And Innovation*, available at* http://ec.europa.eu/competition/publications/cpb/2016/2016_001_en.pdf .
[569] Todino *et al., supra note* 503, at 10.

That is to say, the Commission was accused of utilizing a short time frame (two years, in general, according to the HMG) when evaluating whether any third party would potentially become a viable competitor in the foreseeable future; while the time frame employed to determine the potential competition from Pfizer (*i.e.,* the six to eight years for Pfizer to develop the biosimilar *infliximab)* had been much longer.[570] Commentators also noted that the foregoing time frames taken into account by the Commission also differed from the time frames used in its analyses of other transactions, since, in *Novartis/GSK*, the Commission used a time frame of "five to seven years" when evaluating the innovative products that could potentially enter the market, whereas the relevant time frame in the *Dow/Dupont* decision was considered to be a period of ten years.

Deutsche Börse AG v Commission*[571]*

The Deutsche Börse AG v Commission decision concerns the judgment in which the Commission's decision regarding the Deutsche Börse/NYSE[572] transaction was subject to the review of the General Court. The Commission's decision involved the prohibition of the merger of NYSE Euronext and Deutsche Börse, which were two of the largest exchange platforms on a global scale. The Commission found that the transaction would give rise to a decrease in innovation, due to the fact that the "*Notifying Parties compete head-to-head by offering trading services in products which offer identical economic exposure in both the interest rate and single equity derivatives markets,*"[573] and that the transaction parties were also in competition with one another in the field of introducing "new and improved" contracts.[574]

The Commission's gradual transition into the novel approach towards theories of harm in terms of innovation was also visible herein, since the theories of harm, in this case, did not concentrate on a specific pipeline product, but were instead evaluated

[570] *Id*.
[571] Deutsche Börse AG v Commission, Judgment of the General Court Decision No: ECLI:EU:T:2015:148 Case T-175/12 (2015).
[572] Deutsche Börse/NYSE Euronext, European Commission Decision no COMP/M.6166 (2012).
[573] *Id*. No: ECLI:EU:T:2015:148 Case T-175/12 (2015) at para. 543.
[574] *Id.* at para. 601.

in a broader scope by incorporating the term "innovation spaces,"[575] which was later on frequently referred to in the Commission's subsequent assessments.[576]

The Commission's decision which found that the merger would reduce third parties' incentives to innovate was appealed before the General Court. In its appeal, Deutsche Börse argued that the Commission's findings that (i) "*the parties constrained each other through innovation competition*"[577] and (ii) "*the merger could eliminate 'any technological competition' and give rise to a reduction in innovation available for customers*"[578] were unsubstantiated. However, the General Court upheld the Commission's prohibition decision, by asserting that (i) the Commission was not obliged to evaluate the extent of the reduction in innovation in order to substantiate its conclusion regarding the harm to innovation, and (ii) the elimination of competitive pressure between the parties in the technology market was sufficient for concluding that diminished innovation would harm the consumers' welfare.[579]

Dow/DuPont [580]

The dramatic shift in terms of the Commission's approach to the theories of harm concerning innovation, and the most obvious step of its transition into the novel theory, occurred in the *Dow/DuPont* case. This case concerned the horizontal merger of two undertakings conducting activities related to chemicals for crop protection,[581] which would give rise to the creation of the industry leader. More specifically, the consummation of the transaction would bring about the world's largest crop protection and seeds company, with a market capitalization of USD 130 billion, and, as set forth by the Commission in its decision, this industry had already typically been concentrated for decades. The Commission had significant concerns that the merger would reduce the competition on price and decrease the number of choices for existing pesticides in several markets, as well as reducing innovation.

[575] *Id.* at para. 923.
[576] Petit, (2018) *supra* note 369 at 15.
[577] *Id*.
[578] *Id*. at 16.
[579] *Id*. at 15-16.
[580] Dow/DuPont, European Commission Case M.7932 – § V.8.4 – V.8.6 recitals 2039-2395 (Mar. 27, 2017)
[581] The parties also had other overlapping activities; with that said, the focus of the innovation considerations that constitute our subject here is concerned with the crop protection chemicals.

The Commission considered innovation as a crucial element of competition (to improve existing products and to develop new active ingredients) between the companies in the crop protection industry, where only five players are globally active throughout the entire research & development spectrum. The Commission believed that the transaction would have a substantial impact on innovation competition since it was considered that the merger would result in the loss of competition between crop protection suppliers. In particular, the Commission reflected that such theories of harm would occur as a result of the removal of the parties' incentives (i) to continue to pursue ongoing parallel innovation efforts, (ii) to develop and bring to market new pesticides, and that the transaction would (iii) significantly reduce competition for certain petrochemical products. The parties submitted commitments to address the Commission's concerns by agreeing to divest the entire DuPont pesticide business, including the R&D division. Based on the divestment, the decision also constitutes the first instance in which one of the transaction parties was compelled to divest its R&D division on a global scale, in order to eliminate the Commission's concerns related to innovation competition in the EU jurisdiction.[582]

It was argued that the Commission's assessment in this decision constituted a novel approach towards theories of harm, referred to as "*significant impediment to effective, innovative competition*" approach, which was different from the traditional theories of harm under the EU merger control regime, referred to as the "*significant impediment to effective competition*"[583] approach. The Commission's novel outlook on theories of harm is argued to be discernible from its assertion that "*the Commission considers that the Transaction would be likely to <u>significantly impede effective competition as regards innovation</u> both in innovation spaces where the Parties lines of research and early pipeline products overlap and overall in innovation in the crop protection industry*."[584] (Emphasis added).

In order to assess the effects brought by the transaction on innovation competition, the Commission conducted analyses both at the level of innovation spaces within the

[582] Forbes B., Sangha R. & Hughes, M., *Understanding the New Frontier for Merger Control and Innovation – The European Commission's Decision in Dow/DuPont,* (2018) *at* https://www.alixpartners.com/insights-impact/insights/understanding-the-new-frontier-for-merger-control/ at 1.
[583] Petit, (2018) *supra* note 369 at 2.
[584] Dow/DuPont, European Commission Case M.7932 – § V.8.4 – V.8.6 recitals 2039-2395 (Mar. 27, 2017), at para. 3297.

crop protection industry and on the innovation competition at the industry level.[585] Annex 4 of the *Dow/DuPont* decision,[586] set out more fully how *"[a] merger in innovative industries generates standard unilateral effects in innovation."*[587] A significant part of Annex 4 is devoted to demonstrating the validity of the economic models that predict a post-merger reduction in an innovation competition. The Commission's role was to identify and evaluate the innovation strength of the players in the industry. For this purpose, it used innovation output measures (such as the number of patents and new active ingredients created in the past) and evaluated the concentration levels in each innovation space based on citation-based patent shares and turnover weighted by new active ingredients shares.[588] Nevertheless, the Commission did not take into account input measures such as R&D spending.[589]

The most prominent reason why the *Dow/DuPont* decision is said to mark a significant development in terms of the transition into the "novel theories of harm," is that the Commission's theories of harm, in this case, are not tied to any specific product-market in particular, as opposed to previous examples where the Commission had made clear which product-markets that the competition law concerns were related to. The Commission's analysis herein revolved around R&D activities that were not concerned with any specific product-market, but rather "innovation spaces" that extend until the early stages of R&D work, and which "*includes the "discovery stage" where firms fund early "lines of research" to discover new business areas, concepts, and lines."*[590] In this context, the Commission has later on reconfirmed its position that the theories of harm do not necessarily need to be attached to a particular product-market, by indicating that "*In some cases, you can know in which product the companies are innovating, and you can identify an overlap in the future. But there could be situations where we don't know the outcome*

[585] *Id.* at para. 1956.
[586] Entitled "Implication of the economic theory on mergers, competition and innovation in light of the features of the transaction."
[587] Dow/DuPont, European Commission Case M.7932 (Mar. 27, 2017), Annex 4, § 4.1.1.
[588] *Dow/DuPont*, European Commission Case M.7932 (Mar. 27, 2017), recitals 379-402.
[589] *Id* recital 384.
[590] Petit, (2018) *supra* note 369 at 5.

of the innovation process, but we nevertheless know the innovation process would be harmed as a result of the merger."[591]

Both, the Commission's approach, and the emergence of "innovation spaces" have been criticized, because they were not based on a legal framework, thus making its boundaries ambiguous and rendering the determination of its analytical framework speculative. Neither the HMG nor any other piece of legislation incorporates any explanations or provides any guidance on whether (and how) the long-term effects of the theories of harm related to innovation could be assessed independently from any specific relevant product-market.[592] In the *Dow/DuPont* decision, the Commission based its theories of harm related to innovation on the possible effects of the transaction in ten years' time, in particular on whether the innovative products may or may not enter the market within the relevant time frame. From an economic standpoint, the Commission's approach can also arguably be claimed to have an "*arbitrary*" nature, since forecasting the success rate of an innovative product and predicting whether it would be marketed in a time frame that is essentially unforeseeable, is considered to be impossible.[593] In simpler terms, the intensity of the R&D efforts and investments of an undertaking would not necessarily translate into (or guarantee) the respective product's successful entry to the market. Furthermore, having disregarded defenses based on efficiencies that were deemed not to be specific, quantifiable or verifiable and in its decisions such the *Western Digital Ireland/Vivity Technologies* case above, as per the Merger Regulations, Commission`s own speculative stance regarding innovation spaces is betraying its own standards in evidentiary basis of assessment and acceptable defenses. This approach hardly follows what the ECJ has also tasked the Commission with, in *Commission v Tetra_Laval*: to be ***factually accurate, reliable, and consistent*** in its assessments. If the standards of proof have been indeed relaxed in this novel approach, it seems that this was only allowed for the Commission.

[591] Newman, M., "Dow-DuPont merger remedy reflects EU's growing focus on innovation, Mosso says." *Mlex Market Insight* (Mar. 28, 2017).
[592] Petit, (2018) *supra* note 369 at 13.
[593] De Bure F. & Bary, L., "Disruptive innovation and merger remedies: How to predict the unpredictable?", *Concurrences Antitrust Publications and Events- Concurrences Review* 3 2017 Art. 84407, at para. 17.

Additionally, the *Dow/DuPont* decision was criticized for the fact that the input for the Commission's assessment and the respective theories of harm was largely based on the information obtained from the parties' internal documents. In particular, "*in Dow/DuPont, the EC's document request covered more than 400,000 internal documents, several of which were cited to support the EC's findings that the merging parties were important innovators and that the merger would slow the development of new agrochemicals.*"[594] The Commission's tendency to rely more and more on the information obtained from the transaction parties' internal documents for the theories of harm related to innovation concerns is another subject of criticism, since the information contained therein could be materially subjective, depending on a particular employee's personal views on the pipeline product and the chances of success for a product could have been overestimated due to "corporate chest-thumping," commonly seen in any given company.[595] Therefore, it could be argued that such an analysis might be misleading in terms of evaluating whether the early-stage pipeline product would be approved and released to the market. The internal documents paint a unilateral and usually aggrandized picture of the entity, with various ulterior motives. It is very difficult to filter out the human factor and sentiment in these communications, or the errors made as a result of a limited, single point of view of the market dynamics or restricted access to information on other players. Taken out of context, any number of internal assessments and scenario building may be deemed to substantiate the initial theory harm that the Commission is putting forward. Although internal documents may still be relied upon for identifying a clear breach or intent on part of the entity, it is imperative that such evidence be consumed with care and by giving the entities the benefit of the doubt. After all, such documents may be merely snapshots of numerous scenarios considered and discarded at one point, or a non-realistic portrayal of forecasts to serve hidden agendas, or even drawn up by persons not in decision-making positions in the entities.[596]

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[594] Levy, N. & Karadakova, V., "The EC's increasing reliance on internal documents under the EU Merger Regulation: issues and implications." *European Competition Law Review* 39 1 (2018): 12-23.
[595] Vandenborre, I., "The Importance of the New: Competition Innovation in Life Sciences." *Competition Law Insight* 16 2 (2017); Todino *et al*., *supra* note 454, at 20.
[596] Kuhn, T. *EC focus on internal documents: Time to rethink the architecture of the EU merger control process?* (Mar. 8, 2019) *at* https://www.whitecase.com/insight-our-thinking/ec-focus-internal-documents-time-rethink-architecture-eu-merger-control

Accordingly, such evidentiary basis should not be deemed as conclusive evidence but merely as a corroborating factor with other objective evidence, to ensure that the Commission`s findings are factually accurate and more importantly, reliable.

VI. The Implementation of the Novel Approach in the Last Five Years

ChemChina/Syngenta (2017)

After the Commission's decision on conditional clearance of *Dow/Dupont,* there were two other proposed mergers in the seeds and agricultural chemical sector and the Commission employed its novel approach in all these cases.

In *ChemChina/Syngenta,*[597] the Commission evaluated the acquisition of Swiss agrochemical giant Syngenta by ChemChina, which is active in, among others, European pesticide markets through its wholly-owned Israel-based subsidiary Adama.[598] Syngenta produces pesticides based on active ingredients it has developed itself, but Adama only makes generic pesticides based on active ingredients developed by third parties when patents have expired and is the world's biggest producer of generic pesticides.[599] Since Adama, a generic player under control of ChemChina, only develops and sells pesticides based on active ingredients that are no longer covered by patents and does not conduct further activities on R&D to discover new active ingredients,[600] the Commission found the transaction at hand would not impact the innovation competition in pesticides, and approved the merger subject to divestitures. Similar to *Dow/Dupont*, the Commission applied its "novel approach" and evaluated the earlier stage pipeline products with respect to the parties' existing R&D activities.[601]

Bayer/Monsanto (2018)[602]

The *Bayer/Monsanto* transaction constitutes one of the seminal examples of a case in which the Commission has intervened in the transaction, based on its novel theories of harm related to innovation. The consummation of the transaction, *i.e.,* the

[597] *ChemChina/Syngenta* European Commission (Case M. 7962) Apr. 5, 2017.
[598] *Id*., para. 2.
[599] *Id.,* para. 3.
[600] *Id*., para. 42.
[601] European Commission, Press Release (Apr. 05, 2017) Mergers: Commission clears ChemChina acquisition of Syngenta, subject to conditions, *available at*: https://ec.europa.eu/commission/presscorner/detail/et/IP_17_882.
[602] Bayer/Monsanto, European Commission Decision No. Case M.8084 (2018)

acquisition of Monsanto by Bayer, would create the leading integrated pesticides and seeds company on a global scale; furthermore, both of the transaction parties also conducted innovative activities in their respective sectors, which were already concentrated, similar to the characteristics of the relevant product-market in the *Dow/DuPont* decision.[603]

In its decision, the Commission's theories of harm related to innovation concerned three industries, in particular, namely, (i) seeds, (ii) pesticides, and (iii) digital agriculture. In this respect, even though the Commission's assessment in *Bayer/Monsanto* proceeded along the same line as its novel approach demonstrated in the *Dow/DuPont* case, in contrast to the *Dow/DuPont* decision, the Commission's assessment herein was more focused on which specific product-markets the harm to innovation would actually occur, rather than conducting an assessment that is untied to any specific product-market. Therefore, in *Bayer/Monsanto,* the Commission refrained from asserting any theories of harm for several product-markets (namely, fungicides, insecticides, microbials, and bee health products) where Bayer and Monsanto were deemed not to be close competitors and in which there was an adequate number of competitors in terms of innovative efforts.[604] That said, the Commission evaluated that, in both cases,[605] the parties were close competitors in several innovation spaces. On this note, the Commission indicated in the *Bayer/Monsanto* decision that "*there is evidence that Bayer and Monsanto are important and close innovators in several innovation spaces where few other alternatives are available. In many innovation spaces, the Parties have been in the past, and are likely to continue to be in the future, close and important innovation competitors."*[606] Moreover, the Commission found that the early-stage pipeline products being developed by the parties were likely to take revenue from their counterparts in the future, and that there were not enough competitors working on pipeline projects in the "*the innovation spaces targeted by these early pipeline products*," which were already significantly concentrated and with substantial barriers

[603] European Commission, Press Release (Aug. 22, 2017), *available at* http://europa.eu/rapid/press-release_IP-17-2762_en.htm .
[604] OECD, Non-price Effects of Mergers - Note by the European Union (2018), *available at* https://one.oecd.org/document/DAF/COMP/WD(2018)14/en/pdf at para. 31.
[605] *Id*. at para. 30.
[606] Bayer/Monsanto, European Commission Decision No. Case M.8084 (2018), paras. 80-81.

that rendered entry difficult.[607] In this regard, the Commission found evidence that would suggest that the parties' work related to the pipeline products at the earlier stages of development could be ceased, hindered or re-organized due to cannibalization risks, and thereby impede innovation and prevent the development of new pipeline products. The Commission once again relied heavily on the parties' internal documents: it is indicated that 2.7 million internal documents were reviewed during the evaluation process.[608] On this account, the Commission, after its lengthy assessment, determined that the transaction would have significantly impeded both the price competition and the innovation in the markets which were subject to the Commission's theories of harm. This resulted in the conditional approval of the transaction based on the following set of extensive remedies: (i) the overlaps between the parties stemming from the transaction in seed and pesticides were eliminated through the divestiture of Bayer's seeds and traits business on a global scale, including its R&D business organization, as well as a portion of Monsanto's assets, which have been deemed as a future competitor to Bayer's "*seed treatment against nematode worms*," and (ii) Bayer submitted a commitment to grant "*a license to its entire global digital agriculture product portfolio and pipeline products to ensure continued competition on this emerging market.*"[609]

Johnson&Johnson/Actelion (2017)

In this transaction taking place in the pharmaceutical industry, the Commission conditionally cleared the tie-up in *Johnson&Johnson/Actelion.*[610] Johnson&Johnson and Actelion both develop and sell innovative pharmaceutical products. Their activities are largely complementary, with Actelion marketing medicines in the EEA primarily for the treatment of pulmonary arterial hypertension, where Johnson&Johnson is not active. The main overlap between Johnson&Johnson's and Actelion's products and activities was regarding two compounds (namely, ACT-541468 and JNJ-7922) under the research and development activities in the

[607] *Id*.
[608] European Commission, Press Release (Mar. 21, 2018) *available at* http://europa.eu/rapid/press-release_IP-18-2282_en .
[609] *Id.*
[610] *Johnson&Johnson/Actelion*, European Commission Decision No. Case IV/M. 8401 (2017).

treatments for insomnia.[611] These pipeline drugs have an orexin-antagonists base, which reduces risk of dependency and had less side effects compared to insomnia drugs already available.[612] The Commission found a risk for innovation competition since Johnson&Johnson could discontinue, reorient or delay one of the pipeline compounds after the merger.[613] Further, it was found that there were only a limited number of competitors in the market for orexin-antagonists drugs and thus in the short to medium term, the transaction can diminish the pipeline drugs likely to enter the insomnia market.[614] Johnson&Johnson offered two complementary sets of tailor-made remedies to address the concerns[615] and claimed that the combination of the two orexin-antagonists pipelines would not have a significant impact on competition for multiple reasons.[616]

First, the two pipelines have different mechanisms of action, however the Commission argued that market investigation showed both products would likely be close in their efficacy/safety profile and are among the most promising treatments for insomnia. Second, although the two pipelines were at an early stage of development and still many years away from launch, there were other similar drugs that were at later stages of development and if Actelion's compound is approved for insomnia, it will compete with a number of other existing drugs that are already indicated for insomnia and a highly competitive pipeline. But given the limited number of competitor pipelines and the lengthy time required for the development of new medicinal products, the Commission stated that it was highly unlikely that other orexin-antagonists drugs will appear on the market before the parties' expected

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[611] Wright, L, Zhuang, S and Gilbert, A, *Innovation competition, economic dependence and exceptional remedies: three interesting aspects of the EC's decision in Johnson & Johnson/Actelion* (2017), *available at*: https://www.lexology.com/library/detail.aspx?g=528dbd0e-b2ca-445f-afc9-a7941fa3a670 .

[612] *Johnson&Johnson/Actelion*, para. 26.

[613] *See* Bailly, M, *The EU Commission Clears The Acquisition of a Pharmaceutical Company by a Global Conglomerate Subject To A Commitment That Clinical Development Of Innovative Insomnia Drugs Will Not Be Adversely Affected By The Merger (Johnson & Johnson / Actelion) (2017), available at: https://www.concurrences.com/en/bulletin/news-issues/june-2017/the-eu-commission-clears-the-acquisition-of-a-pharmaceutical-company-by-a-en* at 3.

[614] *Ibid*.

[615] Johnson & Johnson to Acquire Actelion for $30 Billion With Spin-Out of New R&D Company, available at: https://www.jnj.com/media-center/press-releases/johnson-johnson-to-acquire-actelion; Pencheva, Rositsa, Laguna-Goya, Noa and Bailly, Marion, Johnson&Johnson/Actelion - falling asleep fast and deeply while staying fully awake on innovation (2017), available at: https://www.researchgate.net/publication/323757930_Competition_merger_brief_JJActelion-falling_asleep_fast_and_deeply_while_staying_fully_awake_on_innovation.

[616] *Johnson&Johnson/Actelion,* para. 34.

launch date.[617] Lastly, Johnson&Johnson's compound was being co-developed with Minerva and further would be commercialised by Minerva in the EEA, and Johnson&Johnson will have no ability to delay, discontinue or reorient Actelion's compound after the transaction, since it would be transferred to Idorsia, a company that Johnson&Johnson will only acquire a minority interest. However, since Johnson&Johnson holds the patent rights and know-how and granted Minerva an exclusive license to sell while owning a co-exclusive license to use and develop, the Commission determined Johnson&Johnson would still have the ability to discontinue, delay or reorient the global development of the compound and ultimately impact its launch and commercialisation in the EEA.[618] Further, the Commission determined that there will be strong economic links between Johnson&Johnson and Idorsia on a lasting basis since Johnson&Johnson will finance Idorsia and provide Idorsia IP rights coupled with structural links.[619]

BMS/Celgene (2019)

The Commission evaluated Bristol Myers Squibb Company's ("***BMS***") acquisition of Celgene which gave limited horizontal overlaps related to marketed and/or pipeline treatments in autoimmune diseases, fibrotic diseases and oncology.[620] The Commission by again taking the "novel approach" by its four-layer competitive assessment from *Dow/Dupont* and *Bayer/Monsanto,* [621] cleared the acquisition by taking into account the number of actual and potential competitors and its limited impact on the EEA markets,[622] following only a Phase I review. During the assessment, the Commission took into account and agreed with the defences of Celgene on the part of oncology for Celgene's marketed drug, Otezla, and BMS's pipeline products. In this instance, the products had different level of efficacy and safety, the two key elements in the choice of therapy and therefore are differentiated products. Additionally, there were many already available marketed products and many pipeline projects under development for such treatments. Further, Celgene's

[617] *Id*., para. 34.
[618] *Id*., para.41
[619] *Id*., para.46
[620] *BMS/Celgene* European Commission Decision No. Case IV/M. 9294 (July 29, 2019).
[621] *Id*. para. 22; Provost, M. and Thill-Tayara, M., *At a glance: pharmaceutical merger review in European Union* (2021), *available at*: https://www.lexology.com/library/detail.aspx?g=5adfdcdc-63d3-4ce2-9a64-1207fd774ab8
[622] European Commission, Daily News "Mergers: Commission clears acquisition of Celgene by BMS" (July 30, 2019) *available at*: https://ec.europa.eu/commission/presscorner/detail/en/MEX_19_4849

marketed drug will probably lose its exclusivity when BMS's pipeline product enters the market, since the Phase I pipeline product would not enter the market for a very long time. Lastly, the merged entity would have no ability and/or no incentive to discontinue (i) the development of BMS' two pipeline projects or (ii) the supply of Celgene's product.[623]

Google/Fitbit (2020)

In *Google/Fitbit,*[624] the Commission cleared Google's acquisition of Fitbit, subject to remedies. The commission evaluated Google's incentives to innovate in the future with regard to smartwatches and found that the transaction would not restrict innovation competition since Fitbit was not the only or main source of pressure on Google to innovate in all the assessed markets.[625] The Commission argued that Google would likely be less incentivized to innovate in long-term due to the lack of contestability resulting from raised barriers to entry and expansion for Google's competitors, even though the quality of its services may increase in the short-term because of better ads targeting and Google responded to such argument that there were no horizontal theories of harm since Google and Fitbit are active in at different targeted markets, and that Fitbit has health-related innovation efforts focusing on improving its wearable devices, whereas Google is not active in the wearable devices.[626] The Commission ruled out such concerns because "*the parties are neither actual nor potential competitors in the collection or marketing of user health and fitness data*". That said, the parties were also neither actual nor potential competitors in online advertising.[627]

Johnson&Johnson/Tachosil (2020 - abandoned)

The Commission decided to open an in-depth investigation towards Johnson&Johnson's proposed acquisition of Tachosil, where both parties were active in the dual haemostatic patches market, even though Johnson&Johnson was

[623]Gottlieb, C., *The Commission Unconditionally Approves BM's Acquisition Of Celgene* (2019), *available at:* https://www.clearyantitrustwatch.com/2019/10/the-commission-unconditionally-approves-bms-acquisition-of-celgene/

[624] *Google/Fitbit*, European Commission Decision No. Case M. 9660 (Dec. 17, 2020) *available at*: https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=2_M_9660

[625] *Id.,* para. 398.

[626] *Id.,* para. 481.

[627] *Id.,* para. 484.

not active in the European market.[628] In its preliminary view, the Commission argued that the transaction may lead to a significant reduction of competition and innovation in the market for dual haemostatic patches since Johnson&Johnson will eliminate its biggest potential entrant which would have led to higher prices, less choice and reduced incentives to innovate.[629] The parties decided to abandon the proposed acquisition due to the Commission's preliminary concerns.[630]

Illumina/GRAIL (2022 – appeal pending)

Illumina Inc. ("***Illumina***"), a global genomics company, announced on August 18, 2021 that it has acquired Grail Inc. ("***GRAIL***"), a company developing blood-based cancer tests based on genomic sequencing and data science tools.[631] GRAIL had actually been founded by Illumina in 2016 but it was spun out in the same year as a standalone company, while Illumina retained some 12% ownership stake. Illumina announced on September 21, 2020 that it has entered into a definitive agreement with GRAIL, under which Illumina is to acquire GRAIL back for cash and stock consideration of approx. USD 8 billion.[632] The transaction was below the turnover thresholds of the EU Merger Regulation, however, the competition authorities of some of the member states[633] of the European Union and the Federal Trade Commission of the United States raised concerns following the announcement of the acquisition.[634] The case was referred to the Commission under Article 22 of the EU Merger Regulation, and the Commission, decided to initiate an in-depth investigation against the concerned transaction, following its preliminary investigation.[635] It also imposed interim measures[636] on the parties with a view to restore and maintain the conditions of effective competition following Illumina's early acquisition of GRAIL (gun jumping), which means that Illumina held GRAIL as a separate company during the Commission's in-depth investigation.[637]

This transaction and the Commission's in-depth investigation were closely followed by the competition law practitioners, as they have led to a novel practice by the Commission which decided for the first time in its history to review a transaction,

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[628] European Commission, Press Release (March 25, 2020), Mergers: Commission opens in-depth investigation into proposed acquisition of Tachosil by Johnson & Johnson *available at:* https://ec.europa.eu/commission/presscorner/detail/en/ip_20_529.
[629] OECD - The Concept of Potential Competition – Note by the EU (June 10, 2021), https://one.oecd.org/document/DAF/COMP/WD(2021)21/en/pdf.
[630] *Ibid.*

where the jurisdictional thresholds are not met, through re-appraisal of Article 22 of the EU Merger Regulation.[638] In addition, the transaction seemed to fall under the recent idea of "*reverse killer acquisitions*"[639] which also grabbed a lot of attention.

Following a lengthy and detailed investigation, the Commission announced on September 6, 2022 that it has prohibited the implemented acquisition, as it would have "stifled innovation and reduced choice" for consumers, and the remedies proposed by Illumina were deemed insufficient to address the concerns of the authority.[640] It was noted that this transaction may allow Illumina to do away with the competition in the downstream market by refusing to supply to GRAIL's competitors (*i.e.*, engage in output restriction). The Commission indicated that Illumina may apply vertical input foreclosures by utilizing its leading position in the next generation sequencing (NGS) systems, which are required for the development and commercialization of NGS-based cancer detection tests. Furthermore, the Commission also emphasized that Illumina would have the incentive to foreclose

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[631] Illumina Inc., "Illumina Acquires GRAIL to Accelerate Patient Access to Life-Saving Multi-Cancer Early-Detection Test", Press Release, August 18, 2021 *available at*: https://investor.illumina.com/news/press-release-details/2021/Illumina-Acquires-GRAIL-to-Accelerate-Patient-Access-to-Life-Saving-Multi-Cancer-Early-Detection-Test/default.aspx.

[632] Illumina Inc., "Illumina to Acquire GRAIL to Launch New Era of Cancer Detection", Press Release, September 21, 2020 (Available at: https://investor.illumina.com/news/press-release-details/2020/Illumina-to-Acquire-GRAIL-to-Launch-New-Era-of-Cancer-Detection/default.aspx).

[633] France, Belgium, Greece, the Netherlands, Iceland and Norway.

[634] *See* French Competition Authority, Press Release, (Apr. 20, 2021) "La Commission européenne ouvre une procédure d'examen du rachat de Grail par Illumina fondée sur la procédure de l'article 22 du règlement concentrations de 2004" (The European Commission opens an examination procedure for the takeover of Grail by Illumina based on the procedure of Article 22 of the 2004 Merger Regulation), *available at*: https://www.autoritedelaconcurrence.fr/fr/article/la-commission-europeenne-ouvre-une-procedure-dexamen-du-rachat-de-grail-par-illumina-fondee); FTC Press Release, "In the Matter of Illumina, Inc., a corporation and GRAIL, Inc., a corporation." (Aug 13, 2021) *available at*: https://www.ftc.gov/enforcement/cases-proceedings/201-0144/illumina-inc-grail-inc-matter.

[635] European Commission, Press Release (Sept 20, 2021) "The Commission adopts a Statement of Objections in view of adopting interim measures following Illumina's early acquisition of GRAIL" available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_21_4804

[636] European Commission, Press Release (Oct 29, 2021) "Commission adopts interim measures to prevent harm to competition following Illumina's early acquisition of GRAIL" *available at*: https://ec.europa.eu/commission/presscorner/detail/en/ip_21_5661

[637] European Commission, Press Release (July 22, 2021) "Commission opens in-depth investigation into proposed acquisition of GRAIL by Illumina" *available at*: https://ec.europa.eu/commission/presscorner/detail/en/IP_21_3844

[638] *See Thresholds and Article 22* above in Section II.2.

[639] *See* C. Caffarra, G. Crawford, T. Valletti, *"How Tech Rolls": Potential Competition and "Reverse" Killer Acquisitions*, mimeo (May 2020) *available at* https://voxeu.org/content/how-tech-rolls-potential-competition-and-reverse-killer-acquisitions). The authors explain that in cases of "buys instead of builds," the incumbent acquires an already-well-established product and shuts down the development of its own product, or never starts developing a competing product; which they call the "*reverse killer acquisitions*" (as opposed to "*killer acquisitions*" in which the incumbent firm acquires the innovating firm and terminates its innovative efforts, post-merger.)

[640] European Commission, Press Release (Sept 06, 2022) "Mergers: Commission prohibits acquisition of GRAIL by Illumina" *available at*: https://ec.europa.eu/commission/presscorner/detail/en/ip_22_5364

GRAIL's rivals, especially considering the market potential and the innovation competition for early cancer detection tests that is currently ongoing. The Commission had already adopted interim measures and certainly pointed out the importance of maintaining GRAIL`s innovative activities, by Illumina "to finance additional funds necessary for the operation and development of GRAIL" as a specific interim measure.[641] Significantly, the Commission has focused on innovation harm in this case, not just in the transaction parties` activities but specifically with respect to the rivals` incentive to innovate: "*While there is still uncertainty about the exact results of this innovation race and the future shape of the market for early cancer detection tests, protecting the current innovation competition is crucial to ensure that early cancer detection tests with different features and price points will come to the market*."[642] While Illumina did propose various remedies to address the Commission`s concerns (*e.g.*, lowering some of the IP related barriers to entry for its competitors as well as using a standard contract with GRAIL`s rivals until 2033 to ensure GRAIL would not be given preferential treatment), Executive Vice-President Vestager emphasized in her speech that the Commission`s in-depth investigation and efficacy tests conducted with market participants had revealed these would fall short of remedying the competition concerns, as the proposals had limited practicality and constituted a challenge to monitor and -if necessary, to enforce- due to their complexity.[643] In light of the above, the merger was prohibited by the Commission. Illumina has announced its plans to appeal the Commission`s decision, arguing that they believe the merger would, in fact, "accelerate innovation".[644]

It is also important to note that although Illumina had objected to the Article 22 decision,[645] the General Court upheld that the Commission had the competence to examine the merger.[646] The undertaking has further appealed this decision before

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[641] *Id.*
[642] European Commission, Press Release (Sept 06, 2022) "Mergers: Commission prohibits acquisition of GRAIL by Illumina" *available at*: https://ec.europa.eu/commission/presscorner/detail/en/ip_22_5364
[643] Vestager, M., (2022) Remarks by Executive Vice-President Vestager on the Commission decision to prohibit the acquisition of GRAIL by Illumina (Sept. 06, 2022) *available at* https://ec.europa.eu/commission/presscorner/detail/en/speech_22_5371
[644] Illumina Press Release dated September 6, 2022 *available at* https://investor.illumina.com/news/press-release-details/2022/Illumina-Intends-to-Appeal-European-Commissions-Decision-in-GRAIL-Deal/default.aspx
[645] Illumina v Commission, Court of Justice of the European Union (CJEU), T-227/21, (28 April 2021) a*vailable at* https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A62021TN0227
[646] Court of Justice of the European Union Press Release no 123/22 (July 13, 2022) *available at* https://curia.europa.eu/jcms/upload/docs/application/pdf/2022-07/cp220123en.pdf

the Court of Justice of the EU, which, if successful, will annul all the Commission decisions regarding this case. Considering that the Commission may order Illumina, who had closed the transaction in breach of its standstill obligation, to pay fines and also to "dissolve the transaction and restore GRAIL`s independence"[647] the outcome of this Article 22 appeal will be highly significant.

Interestingly, despite a similar beginning, the story unfolded quite differently across the pond. In 2021, parallel to the EU concerns, the FTC had also emphasized the potential loss of innovation in the US market for multi-cancer early detection tests due to this transaction, as GRAIL is the supplier of the multi-cancer early detection tests and Illumina is the only provider of DNA sequencing. Accordingly, the authority had initiated an administrative complaint process and also authorized a federal court lawsuit to block the proposed acquisition.[648] Once the European Commission commenced its investigation, the FTC dismissed its federal case (as the transaction could not go ahead without EU clearance anyway) and instead, preferred to stay with the administrative proceedings. However, on September 1, 2022 (just five days before the Commission`s decision) the Administrative Law Judge ruled in favor of Illumina, noting that the FTC failed to demonstrate that the acquisition would harm competition.[649] The remedies Illumina proposed *i.e.*, providing contractual guarantees of access to its sequencing and commitment to significantly reduce prices under the Open Offer,[650] were thus deemed to be "effective constraints" to prevent foreclosure.[651] The FTC is now appealing this decision before the full commission.[652] While the administrative law judge`s decision seems to reiterate the US approach to vertical mergers being pro-competitive (discussed in detail under Chapter V below) the response by the FTC commissioners may not be as favorable.

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[647] Vestager, M., (2022) Remarks by Executive Vice-President Vestager on the Commission decision to prohibit the acquisition of GRAIL by Illumina (Sept. 06, 2022) *available at* https://ec.europa.eu/commission/presscorner/detail/en/speech_22_5371

[648] FTC Case Summary dated August 31, 2021 *available at* https://www.ftc.gov/enforcement/cases-proceedings/201-0144/illumina-inc-grail-inc-matter

[649] Illumina Press Release dated September 1, 2022 *available at* https://www.illumina.com/company/news-center/press-releases/press-release-details.html?newsid=695f87e8-5d42-4caa-9c9c-4539a2630068

[650] Illumina Press Release dated March 30, 2021 *available* https://www.illumina.com/company/news-center/press-releases/press-release-details.html?newsid=32156cec-c392-4d23-be23-66d7729892db, see also the standard contract terms offered and expanded by Illumina *available at* https://www.illumina.com/areas-of-interest/cancer/test-terms.html

[651] McNelis, N., "Illumina's remedy offer was sufficient to clear FTC's foreclosure doubts, judge says" *Mlex Market Insight* (Sep. 02, 2022) *available at* https://content.mlex.com/#/content/1406092

[652] Competition Policy International FTC Appeals Judge's Decision On Illumina-Grail Deal (2022) available at https://www.competitionpolicyinternational.com/ftc-appeals-judges-decision-on-illumina-grail-deal/

Considering the diverging roads this case has taken in the two jurisdictions, it will certainly be interesting to see how the relevant appellate authorities will address the matter.

Nvidia/Arm (2021 – abandoned)

The most recent case on innovation before the Commission was the proposed transaction regarding the acquisition of all shares in, and thus sole control of, Arm Limited ("Arm") by NVIDIA Corporation ("NVIDIA").[653, 654]

NVIDIA and Arm are entities that both active in the semiconductors industry, albeit at different levels: NVIDIA designs and supplies accelerated computing platforms including graphics processing units for gaming, datacenters, professional visualization, and automotive applications. Through its acquisition of Mellanox in April 2020, NVIDIA also started supplying network interconnect products and solutions. Arm, on the other hand, develops and licenses the intellectual property (IP) for central processing units ("***CPU***") which are used by semiconductor suppliers and systems-on-chip ("***SoC***").

Due to the extent of the parties` activities, the proposed transaction requires the approvals of various competition authorities, including those in Europe, the United States, China, Korea and the United Kingdom.[655] At this time, in addition to the Commission, the UK Competition and Markets Authority ("***CMA***") and the Federal Trade Commission ("***FTC***") have also launched in-depth inquiries into the acquisition upon complaints by Google, Microsoft and Qualcomm, who heavily rely on Arm's IP.[656]

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[653] Nvidia/Arm European Commission Case No M.9987 (Abandoned/withdrawn on Feb 08, 2022) *available at* *https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=2_M_9987*

[654] European Commission, Press Release (July 22, 2021) "Commission opens in-depth investigation into proposed acquisition of GRAIL by Illumina" *available at*: https://ec.europa.eu/commission/presscorner/detail/en/IP_21_3844

[655] Baek, Byung-Yeul, "Tesla, Amazon oppose Nvidia's acquisition of Arm", *The Korea Times*, (2021) *available at* https://www.koreatimes.co.kr/www/tech/2021/08/133_314738.html .

[656] McLaughlin, D., King, I., & Bass, D. "Google, Microsoft, Qualcomm Protest Nvidia's Acquisition of Arm Ltd." *Bloomberg* (2021) *available at* https://www.bloomberg.com/news/articles/2021-02-12/google-microsoft-qualcomm-protest-nvidia-s-arm-acquisition

The Commission was officially notified of the transaction on 8 September 2021[657] and announced that it was initiating the Phase II investigation on 27 October 2021.[658] According to the Commission, competition concerns arise under this proposed transaction not because the two undertakings are close competitors and active in the same product market, but because Arm`s IP is used in manufacturing the products that compete with the products of NVIDIA in certain sectors including automotive, internet of things ("***IoT***"), and datacentres.

The Commission indicated that the proposed acquisition may lead to more expensive products, less alternative products and reduced innovation in the semiconductor industry. In this regard, Executive Vice-President of the Commission, Margrethe Vestager emphasized the semiconductor's prevalence in infrastructure such as datacentres, and stated that "*(…)Our analysis shows that the acquisition of Arm by NVIDIA could lead to restricted or degraded access to Arm's IP, with distortive effects in many markets where semiconductors are used. Our investigation aims to ensure that companies active in Europe continue having effective access to the technology that is necessary to produce state-of-the-art semiconductor products at competitive prices."*

In its press release on the transaction, taking into account Arm's market power for CPU IP, the Commission indicated that the merged entity may have the ability to hinder NVIDIA's rivals' access to Arm's CPU IP. Consequently, the Commission concluded that the proposed acquisition may hinder competition in, (i) datacentre CPUs, (ii) smart network interconnects that are used in datacentres for various purposes such as offload network or storage, (iii) semiconductors used for automotive advanced driver-assistance systems that enable vehicles to assist the driver, (iv) semiconductors used in infotainment applications that include information and entertainment services for drivers and passengers in a vehicle, such as automotive navigation systems, USB and Bluetooth connectivity and Wi-Fi, and, (v)

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[657] Nvidia/Arm European Commission Case No M.9987 (Abandoned/withdrawn on Feb 08, 2022) *available at https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=2_M_9987*

[658] European Commission, Press Release (Oct 27, 2021) '*Mergers: Commission opens in-depth investigation into proposed acquisition of Arm by NVIDIA*' *available at*: https://ec.europa.eu/commission/presscorner/detail/en/ip_21_5624 .

SoCs used in high-performance IoT devices, gaming consoles and general-purpose PCs.

In light of the above, the Commission's Phase II review was expected to focus on the effects of the transaction on innovation; particularly whether there would be any stifling of innovation due to the Arm licensees reluctance to share commercially sensitive information with NVIDIA through the merged entity. The Commission would assess whether Arm's R&D expenditure would be directed towards products with higher profits, to the detriment of players heavily relying on Arm IP in other areas that may not have been as profitable. However, the investigation aborted/withdrawn on 08 February 2022, as the parties` abandoned the transaction due to "significant regulatory challenges preventing the consummation of the transaction."[659] Considering that the CMA and the FTC, along with other authorities, had also initiated in depth investigations or lawsuits against this merger, this result is not unexpected.

The Asymmetry in the Commission`s Approach

It is apparent that in the beginning of its "novel approach" (in *Dow/Dupont* and *Bayer/Monsanto*), the Commission ruled out the innovation defences of the merging parties and conditionally cleared the mergers subject to divestitures. However, the Commission's "novel approach", which takes into account the innovation at such an early stage (by only looking at the early R&D efforts of the merging parties which have not yet gained shape) and the Commission's theory of harm was criticized by some for being speculative and having a narrow point of view.[660] As such, in *Dow/Dupont*, *ChemChina/Syngenta*, and *Bayer/Monsanto* the Commission does not evaluate the power of future competitors (considering its R&D projects and its pipeline products) and disregards the possibility of the success of merging parties' R&D projects. Although the "novel approach" has not significantly changed since *Bayer/Monsanto*, it is still possible to see slight differences in *Johnson&Johnson/Actelion* and *BMS/Celgene*, where the Commission has taken

[659] Nvidia Newsroom Press Release (Feb. 7, 2022) *available at* https://nvidianews.nvidia.com/news/nvidia-and-softbank-group-announce-termination-of-nvidias-acquisition-of-arm-limited

[660] *See* Solidoro, S., Assessing Innovation Theories of Harm in EU Merger Control (2019); *available at* https://cadmus.eui.eu/bitstream/handle/1814/64768/PB_2019_18.pdf?sequence=1&isAllowed=y

into account the power of future competitors. Moreover in *Johnson&Johnson/Actelion*, *BMS/Celgene* and *Google/Fitbit*, it can be stated that the Commission evaluated the overlaps in potential innovation markets whilst taking into account the potential result of the pipeline or R&D products of the parties. However, the "novel approach" still retains its narrow and unpredictable nature; which may also contribute to abandonment of transactions like *Johnson&Johnson/Tachosil* or *Nvidia/Arm*. This again highlights the innovation paradox: the transaction parties` burden for efficiency defenses remains almost unattainably high, and yet the Commission can easily rely on internal documents that do not always constitute the most objective or factual evidence. Considering all the tools that are available to the Commission, the novel approach can potentially be wielded much more effectively; by considering economic and neutral evidence primarily and only then relying on internal documents as corroborative factors; so that it could actually attain the standard of proof set out in *Tetra Laval.*

VII. Conclusion

Historically, the theories of harm related to innovation have been based on the underlying principles of the Commission's HMG. The classic framework of the legislation leaves the Commission some room to maneuver for interpretation and case-by-case examination, since the legislation does not provide explicit or detailed guidance on how innovation concerns are to be assessed in merger reviews. This leeway for interpretation is corroborated through the evolving nature of the Commission's approach, as depicted in the scope of the foregoing case law.

The Commission's initial stance towards innovation considerations in merger control was based on utilizing the traditional tools that were available to it. Therefore, its theories of harm were based on SIEC, and the relevant product-markets were clearly defined. In the traditional approach, the focus was on developed pipeline products, rather than pipeline products in their early stages. Consequently, the Commission assessed the competitive pressure applied by competitors and by the transaction parties themselves to one another. The criteria for assessing these elements were symmetric. Finally, the standard of proof for verifying the assessment of these elements was determined to be meticulously high, incorporating information sources

from the field, sector participants, competitors, and the transaction parties, amongst others.

However, the assessment of innovation concerns in competition law has also proved to be as dynamic as innovation's ever-changing nature. The Commission's approach has gradually evolved from the traditional approach into the novel approach; the most significant and easily discernible example of which was the 2017 decision on the merger of Dow and DuPont. The evolved approach of the Commission, as demonstrated in that case, has a number of aspects that differentiate it from the Commission's approach in the traditional era. The most prominent of these differences is the introduction of a novel theory of harm, namely, the assessment of competition for "significant impediment to effective innovative competition." This newly introduced theory of harm is a leap into unchartered territories, considering that its predecessor (namely, "significant impediment to effective competition") was set forth and regulated by the legislative framework itself. This new methodology has also introduced the concept of "innovation spaces" into competition law assessments, rather than the classic and constrained analysis based on the bedrock concept of the "relevant market." This new approach considers the terrain on which the competitive analysis takes place to be boundless. Furthermore, the potential subject of such competition law analysis was also extended to encompass early-stage pipeline products, which may lead this new methodological approach to reach conclusions with less predictive ability about products whose futures are more uncertain, if not highly speculative. As for the standard of proof, the novel approach demonstrated in both the *Dow/DuPont,* and *Bayer/Monsanto* cases include a specific focus on using internal documents obtained from the transaction parties. In this context, it is worth remembering that the Commission examined 40,000 internal documents during *Dow/DuPont* and an even more staggering 2.7 million documents during *Bayer/Monsanto*. This methodology was also criticized by commentators, as internal documents may be considered more subjective (due to the potential for corporate chest-thumping), and therefore, considered to fall short of the criteria that one would require neutral evidence material to meet.

All in all, although the current "novel" approach of the Commission could be considered by some to be intrusive or ambiguous, the traditional approach's use of

classic tools for assessments might also be deemed to lack the capacity to adapt to the needs of the modern global economy and to assess the dynamism of the evolving market structures. Having said this the relaxation of boundaries in terms of the markets/products assessed or the standards of proof seem to be flowing only towards one direction and remain asymmetrical, as the transaction parties` efficiency defenses are still required to demonstrate that any efficiencies will be merger-specific, quantifiable and verifiable. Considering the various commercial and cost implications of delaying the transaction until approval, it is very likely that some of the parties may actually choose to divest or provide various commitments, in order to secure the conditional approval as soon as possible, rather than tackle such burden, which conversely could actually harm future innovation. In conclusion, the puzzle of how competition and innovation correlate in the scope of the EU merger control regime is, fundamentally, a question of policy, which may help to foster innovation and strengthen competition or, at times, be overly invasive.

Chapter 4

Innovation Considerations in the Merger Control Regime in the United Kingdom

I. Introduction

Since the UK's accession to the EU, the competition law cases that affect businesses and consumers in the United Kingdom were dealt with under EU law, enforced by the Commission and reviewed by the EU Court of Justice (and General Court), and this was the case as long as the United Kingdom was a member.[661] In other words, during that period, if a transaction within the merger control fell within the exclusive jurisdiction of the Commission under the EU Merger Regulation,[662] then EU law would be applied in reviewing the transaction.

However, when concentrations do not fall under the EU Merger Regulation, they are dealt with the jurisdiction of the Member States. These concentrations are usually evaluated by the national competition authorities of those Member States, such as the competition enforcement authorities in the UK and known as the "one-stop-shop" regime.[663] In light of this principle, if the Commission maintains jurisdiction over a merger that has an "EU dimension" (which would be determined on the basis of the turnover of the merging undertakings), then the authorized competition authority in the UK—namely, the Competition and Markets Authority ("CMA")—will not be able to review the case, except in cases where the CMA has a duty to refer such mergers.[664]

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[661] Grenfell, M., A View From The CMA: Brexit And Beyond. Speech At The Advanced EU Competition Law Conference (May 16, 2018), *available at* https://www.gov.uk/government/speeches/a-view-from-the-cma-brexit-and-beyond .

[662] European Union, Council Regulation (EC) No 139/2004 On the Control of concentrations between undertakings" Official Journal I 24/1 (the "EC Merger Regulation" or "EUMR") (2004), *available at* https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004R0139&from=EN .

[663] EU & Competition Law. Bell R. & Haig W., *How will a No-Deal Brexit Effect Merger Control*, (2019), *at* http://eu-competitionlaw.com/how-will-a-no-deal-brexit-effect-merger-control/

[664] Under Chapter three of the Enterprise Act 2002 ("*EA*"), which came into force on June 20, 2003, and the amending Enterprise and Regulatory Reform Act 2013 ("*ERRA*"), in case a merger with a Union-dimension has "principal competitive effect" in the UK, it may be referred back, in whole or in part, for investigation by the CMA. In cases of markets of insufficient importance or existence of relevant customer benefits that outweigh the expected 'substantial lessening of competition' and any adverse effects as a result of the concerned merger, the

In this regard, the Commission's approach to innovation under the EU merger regime and detailed case analysis is demonstrated under Chapter Three. In this chapter, the researcher will attempt to answer the following question: how do the UK's competition authorities *i.e.* the CMA and its predecessors, the Office of Fair Trading ("OFT") and the Competition Commission ("CC") evaluate innovation as a concept or the innovation theories of harm?

The researcher will also address how these considerations may be affected as a result of "Brexit,"[665] when the UK's competition law regime has broken free from the jurisdiction of the Commission. The CMA became the sole executive authority to tackle all anti-competitive practices that affect the markets in the UK, and empowered to review all mergers and acquisitions affecting the UK (assuming the national jurisdictional thresholds are met) once Brexit took effect.[666] In this regard, we will also discuss whether Brexit has already or is expected to create any effects with regards to innovation considerations in the merger control regime in the UK.

II. An Overview of the Merger Regime in the UK

The CMA, which is an independent, non-ministerial government department, is the leading competition and consumer authority in the UK. The CMA acquired its powers on April 1, 2014 and took over the competition enforcement functions of the CC and the OFT. The competition law framework in the UK consists of the Competition Act 1998 and the Enterprise Act 2002 on mergers and markets. Chapters I and II of the Competition Act 1998 mirror Articles 101 and 102 of the TFEU, respectively.

CMA can exercise its discretion and choose not to make a reference. (Whish R. & Bailey D. (2018) *Competition Law* (9th ed.) Oxford University Press).

[665] Withdrawal from the EU is a complex process of negotiations, which is regulated under Article 50 of the Treaty on European Union ("*TEU*"). Article 50 requires member states wishing to withdraw from the EU to take the necessary steps in accordance with their own constitutional requirements for deciding the withdrawal and notify the European Council of such intention. Moreover, as per Article 50 of TEU, the EU and such member state(s) that wish to withdraw shall conclude an agreement to set out the arrangements and determine their future relationship with the EU. In light of this provision, the UK's exit from EU membership ("Brexit") was put to a question on Jun. 23, 2016, with a non-binding national referendum, and following a period of negotiation and postponements, the UK and the EU agreed that the UK would leave the UK at midnight on 31 January 2020, with a transition period until Dec. 31, 2020.

[666] The timing of when the competition authorities will be authorized to exercise their jurisdiction depended on when the withdrawal would take place. Accordingly, the CMA 2020/21 Annual Report provides that "*In 2019/20 we have made substantial progress in ensuring that we have the necessary people, skills and infrastructure in place to take on our expanded role outside of the EU from January 2021. We will be ready to launch or take over major international cartel and antitrust cases, merger investigations and (under previously announced Government proposals) potentially enforcement of national subsidy control rules.*" *available at* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/873689/Annual_Plan_2020-21.pdf Para 3.45

The merger control regime in the UK is governed by the Enterprise Act 2002 ("EA"). It promotes competition both within the UK and outside, for the benefit of consumers.[667] As a general rule, mergers that are covered by the EU Merger Regulation ("EUMR") are excluded from review by the CMA.[668] In this regard, the CMA is tasked with reviewing and investigating mergers that take place within the UK and that raise competition law issues and concerns.[669]

There are specific structural differences between the EU merger control regime and the UK merger control regime, which create significant implications for the substantive assessment of mergers.[670] For instance, under the EUMR, there is a compulsory pre-notification requirement for transactions with an EU dimension, whereas, under the UK competition law rules, there is no duty to pre-notify transactions to the CMA.[671] Since this is voluntary, it is accepted and acknowledged that not notifying a merger to the CMA does not create negative impacts for the merging undertakings with regards to the CMA's substantive evaluation of the competitive effects of a merger.[672]

In assessing a particular merger transaction, the CMA considers whether (i) a relevant merger situation has been created (or, for anticipated mergers, will be created); and, if so, (ii) whether or not this situation will lead to a substantial lessening of competition. Here, both elements must be present in order for the CMA to review a transaction on its own initiative.[673] Therefore, it is essential to analyze first whether a merger can be considered to produce a "relevant merger situation" ("RMS"), and then determine whether there is a realistic prospect of a "**substantial lessening of competition**." This substantive test applied by the CMA is called an

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[667] Competition & Markets Authority Mergers: Guidance on the CMA's jurisdiction and procedure (2014) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/384055/CMA2__Mergers__Guidance.pdf at 2.4.
[668] *Id*. at 3.11.
[669] *Id*. at 3.6.
[670] *Id*. at 1.17.
[671] Whish R. & Bailey D., (2018) *Competition Law* (9th ed.) Oxford University Press, at 936.
[672] Competition & Markets Authority Mergers: Guidance on the CMA's jurisdiction and procedure (2014) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/384055/CMA2__Mergers__Guidance.pdf , at 6.2.
[673] Competition & Markets Authority Mergers: Guidance on the CMA's jurisdiction and procedure (2014) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/384055/CMA2__Mergers__Guidance.pdf, at 3.1.

"SLC test," which is distinct from the test used by the Commission (*i.e.,* the "SIEC" test, referring to a significant impediment of effective competition, in particular as a result of the creation or strengthening of a dominant position.) However, it should be noted here that the underlying economic approaches and analyses in both tests are generally similar.[674]

Given that a "relevant merger situation" can be defined as "*a merger that meets one of the jurisdictional thresholds, and covers several kinds of transactions and arrangements*,"[675] and since this definition, to a great extent, draws the lines of the jurisdictional thresholds for the CMA, we will not go into the details of what constitutes an RMS. For the purposes of this Chapter, it is sufficient to note that the criteria for an RMS include certain formalistic and procedural aspects of the transaction in question, such as whether "two or more enterprises (broadly speaking, business activities of any kind) cease to be distinct" and whether there are "arrangements which will lead to enterprises ceasing to be distinct," as well as a turnover test (*i.e.*, the target company having £70 million or more annual turnover)[676] and a share of supply test (*i.e.*, the transaction increasing the parties` combined share of supply to at least 25% of the goods or services supplied in the UK or a substantial part of it).[677]

As competition is viewed as "*a process of rivalry between firms seeking to win customers' business over time by offering them a better deal*"[678] under the UK merger regime, the SLC test applied by the CMA includes an analysis of whether the transaction "*has a significant effect on rivalry over time, and therefore on the*

[674] Competition Commission and Office of Fair Trading, Merger Assessment Guidelines (2010) at 1.16.
[675] Competition Commission and Office of Fair Trading, Merger Assessment Guidelines (2010) at 3.1.1.
[676] Under the National Security and Investment Act 2021, UK government was empowered to review mergers on national security grounds, and a much lower (£1 million) was introduced for the annual turnover merger control threshold for Relevant Enterprises active in certain specified sectors (such as, quantum and military technology, computer processing units, artificial intelligence, cryptographic authentication and advanced materials and energy), as well as removing the requirement to increase share of supply. Under its consultation on "Reforming competition and consumer policy" the UK government has, among other notable issues, proposed significant changes to the jurisdictional thresholds to reflect the effect of inflation and enable the review of "killer acquisitions." *See* the government`s response to the consultation for more details. *available at* https://www.gov.uk/government/consultations/reforming-competition-and-consumer-policy/outcome/reforming-competition-and-consumer-policy-government-response
[677] For all criteria, *See* CMA Mergers: Guidance on the CMA's jurisdiction and procedure (2014 as amended January 2022) at 4.3; Guidance on changes to the jurisdictional thresholds for UK merger control (2018), *available at* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/903147/guidance_on_changes_to_the_jurisdictional_thresholds_for_UK_MC.pdf at 3.1.
[678] Competition Commission and Office of Fair Trading, Merger Assessment Guidelines (2010), at 4.1.2.

competitive pressure on firms to improve their offer to customers or become more efficient or innovative."[679] Under this test, the CMA examines and evaluates the unilateral, coordinated and vertical or conglomerate effects of both horizontal and non-horizontal mergers.

In assessing the effects of a merger and applying the SLC test, the CMA resorts to particular theories of harm that address the potential changes arising from the merger, its impact on rivalries in the relevant markets and the expected harm to customers.[680] Accordingly, the CMA (i) takes into account the commercial rationale for the transaction, (ii) compares the competitive outlook as a result of the merger with the situation in the absence of the merger,[681] and (iii) evaluates the competitive offerings of the merging parties and how they may be affected (in terms of both price or non-price aspects, such as the quantity sold, service quality, product range, product quality and innovation) as a result of the transaction.[682] In this regard, since it is recognized that a merger can give rise to an SLC if it has a significant effect on rivalry in the relevant market over time, the CMA will take into account the competitive pressure to offer improved products and services or to become more efficient or innovative.[683] Thus, it can be concluded that innovation considerations constitute a vital part of the CMA's SLC test, and therefore, is an integral part of the merger control review mechanism in the UK.

III. Innovation Theory of Harm in the UK Merger Control Regime

Innovation has long been on the agenda of the previous and current competition authorities in the UK. Like other counterparts across the globe, the CMA has been showing signs of a growing focus on digital commerce, technology and innovation.[684] Indeed, there have been a large number of merger cases since 2004, where the competition authorities in the UK have included innovation considerations in their

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[679] Competition Commission and Office of Fair Trading, Merger Assessment Guidelines (2010), at 4.1.3.
[680] Competition Commission and Office of Fair Trading, Merger Assessment Guidelines (2010), at 4.2.1.
[681] The analytical tool used by CMA to answer the question of whether the merger gives rise to an SLC is known as the "counterfactual." By way of this tool, the CMA needs to put forth its projection on what would become of the target in the absence of the proposed transaction.
[682] Competition Commission and Office of Fair Trading, Merger Assessment Guidelines (2010) at 4.2.3.
[683] *Id*. at 4.1.3.
[684] *See* Coscelli, A., (2019) Competition in the digital age: reflecting on digital merger investigations, speech delivered at the OECD/G7 conference on competition and the digital economy, *available at* https://www.gov.uk/government/speeches/competition-in-the-digital-age-reflecting-on-digital-merger-investigations .

evaluations of proposed mergers. This has also been articulated in the CMA's Annual Plan 2019-20[685] whereby the CMA has expressed its continuing willingness to maintain "*the pressure on companies to innovate.*" In line with this motivation, the CMA has sent a letter to Her Majesty's Government, following the Digital Competition Expert Panel held by independent academics, in order to call for a number of substantial reforms in the realm of merger control enforcement in digital markets, particularly with respect to amendments to merger control guidelines and the CMA's enforcement tools, such as interim orders, and appeal standards and procedures.[686]

In its letter, the CMA emphasized that the traditional assessment methods (focusing on price effects) might not be sufficient to accurately determine other indicators and markers of competition, such as quality and innovation while acknowledging the challenges for post-merger counterfactuals introduced by new and rapidly evolving digital markets.[687]

As part of its continual evaluation program, the CMA has recently published a commissioned report[688] (the "*Lear Report*"), which concerns past merger decisions in the digital sector. The report evaluates the performance of the competition authorities with regard to five cases (namely, *Facebook / Instagram*, *Google/Waze*, *Priceline/Kayak* and *Expedia/Trivago* (analyzed jointly) and *Amazon/The Book Depository*), and extensively scrutinizes the theory of harm they put forward. According to this report, particularly over the last decade, in merger cases involving two important innovators or where the transaction eliminated a firm with new products in the pipeline, the competition authorities assessed the potential effects of

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[685] CMA, Annual Plan 2019/20 (Feb 2019), *available at* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/778629/AnnualPlan-201920-FINAL-TRACKED.pdf at 11.

[686] *Id*.

[687] Competition & Markets Authority Digital Competition Expert Panel recommendations – CMA view (2019), *available at* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/788480/CMA_letter_to_BEIS_-_DCEP_report_and_recommendations__Redacted.pdf .

[688] Argentesi, E., Buccirossi, P., Calvano, E., Duso, T., Marrazzo, A., and Nava, S., (2019) Ex-Post Assessment Of Merger Control Decisions In Digital Markets. Final Report prepared by Lear for the Competition Markets Authority. *Available at* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/803576/CMA_past_digital_mergers_GOV.UK_version.pdf (the "*Lear Report*").

these transactions on the incentives to innovate, especially with regards to the merged entities.[689]

Upon an examination of the decisions taken by the competition authorities based on sector category classifications, we also agree with the above findings of the Lear Report. In addition to the Lear Report's findings, our review of the cases in which the Cas evaluated innovation-related issues, reveals that in certain sectors, such as electronics and online platforms, innovation considerations tend to be given a more pivotal role in merger control cases, and therefore, are examined more thoroughly. The simplest explanation for this phenomenon would be that competition authorities view traditional markets (such as agricultural or clothing industries) as not entailing as many innovative products or processes to the same extent as the electronics industry or online platforms.[690] As will be explained in detail below, this viewpoint and approach was intentionally adopted by the competition authorities, as they characterize specific industries as requiring constant innovation.

Contrary to numerous other jurisdictions where there is a severe lack of precedents concerning the innovation theory of harm, the UK is a jurisdiction that has dealt with an abundance of innovation cases. This is mostly due to its "market share" test (*i.e.,* the threshold of "one-quarter in the UK," outlined in Section 23(3) of the EA),[691] which enables the UK to be one of the jurisdictions that handle a large number of merger control cases. By way of this market share test, the competition authorities can review transactions from an innovation aspect, even if the transaction parties do not generate any turnover in the UK, such as Google, Facebook.

Revised Merger Guidelines

In line with the above, the CMA has focused more on innovation and non-price factors affecting competition in the recently revised CMA Merger Assessment Guidelines ("***Revised Merger Guidelines***").[692] It was also deemed to be more

[689] The Lear Report.
[690] That being said, this would not necessarily mean that these traditional markets will never be modernized or introduce innovative products. In fact, in light of the ongoing climate crisis, one of the most important focal points of these markets is providing environmentally friendly products.
[691] Enterprise Act 2002, as amended by the Enterprise and Regulatory Reform Act 2013, c. 40 § 30.
[692] CMA, *Merger Assessment Guidelines,* CMA129*,* March 2021 *available at*

interventionist due to granting CMA more discretion and flexibility in terms of its assessment on various factors, such as determining what would constitute substantial lessening of competition and in certain cases moving forward with the competitive assessment without a precise market definition and as indicated above, transitioning to more quantitative non-price factors rather than price related parameters.[693] Accordingly, the Revised Merger Guidelines indicate that "substantial" does not always refer to "large" but may transpire into various other meanings which should be evaluated on a case-by-case basis, *e.g.,* whether the transaction would lead to "*the merged entity being able to profitably and unilaterally raise its prices, worsen its quality or service and non-price factors of competition, or reduce innovation efforts at one or more of the pre-merger businesses."*[694] Along these lines, it is seen that the CMA now tends to scrutinize non-price related factors such as service, quality and innovation more, when assessing whether the transaction under review is likely to give rise to a substantial lessening in competition in the said market.[695]

Similarly, Paragraph 2.18 specifies innovation as a key aspect of competition between the transaction parties, noting that any threat to innovative behavior should be especially taken into account within the competitive process. When assessed together with Paragraph 2.4, which provides that non-price aspects can even be the primary focus for some cases,[696] it is considered that both the CMA, the parties to the transaction and interested third parties will be able to put forth new non-price related theories and arguments, including innovative factors and these will play a greater role in any given assessment.

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https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1051823/MAGs_for_publication_2021_--_.pdf

[693] Olsen, G., Schwarz, D., "The CMA's Revised Merger Assessment Guidelines—Interesting Times and Creative Energy" Journal of European Competition Law & Practice, Volume 13, Issue 1, 35–41 (2022), https://doi.org/10.1093/jeclap/lpab074

[694] *Merger Assessment Guidelines,* CMA129*,* March 2021, Para.2.17

[695] Hazell A., Saunders R, Bringing the CMA's Merger Assessment Guidelines up to date, (2021) CMA Blog, at https://competitionandmarkets.blog.gov.uk/2021/04/08/bringing-the-cmas-merger-assessment-guidelines-up-to-date/ ; Harper, P., Newman, K., Holmes, N., Borg, A., Morgan, C., Wright, L. (GCR) Merger Control in the Post-Brexit Landscape (2021) available at https://globalcompetitionreview.com/review/the-european-middle-east-and-african-antitrust-review/2022/article/uk-merger-control-in-the-post-brexit-landscape; Olsen & Schwarz *supra note* 693.

[696] CMA, *Merger Assessment Guidelines,* CMA129*,* March 2021, Para. 2.4

Another aspect of the Revised Merger Guidelines is the focus on potential competition, especially in terms of dynamic markets, where competition is more fierce and the evolvement of the market characteristics are less certain.[697] The CMA has thus taken into account the Furman Report where it was recommended that the CMA should put more emphasis on theories of harm relating to innovation and potential competition.[698] Along these lines, the CMA indicates that it could still find that there is substantial lessening of competition and evaluate that the transaction will have adverse effects, even though the future development of the market is not yet certain.[699]

Along with the above, the studies and recent reforms undertaken by the CMA are expected to create a more dynamic agency which is engaged in the current market phenomena; to increase its knowledge, accountability and effectiveness for protecting consumer interest.[700]

Before delving further into the precedents below, we note, as a general observation, that in their competition analyses of these cases, the competition authorities mainly scrutinized (i) innovation competition between the relevant transaction parties, (ii) the parties' incentive to innovate, and (iii) the number and innovative capabilities of competitors after the completion of the proposed transactions. For instance, in some cases, the competition authorities took into account the number of innovative bidders, as one of most innovative bidders left the market in which customized services/products were needed due to the characteristics of the downstream markets. Furthermore, the competition authorities also concentrated on whether the parties were motivated to continue to innovate after the merger transaction; in other words, whether they would face any innovation competition in the relevant market. In several cases, the competition authorities also assessed whether one of the parties

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[697] Harper *et al supra note* 695.

[698] The Digital Competition Expert Panel, *Unlocking Digital Competition*, 12, (2019). https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/785547/unlocking_digital_competition_furman_review_web.pdf. Also known as the "Furman Report", it recommended Action 7, where "The CMA should further prioritise scrutiny of mergers in digital markets and closely consider harm to innovation and impacts on potential competition in its case selection and in its assessment of such cases."

[699] Greg Olsen & Daniel Schwarz, *The CMA's Revised Merger Assessment Guidelines—Interesting Times and Creative Energy*, Journal of European Competition Law & Practice, Volume 13, Issue 1, 35–41 (2022), https://doi.org/10.1093/jeclap/lpab074

[700] Kovacic W. E. The CMA in the 2020s: a dynamic regulator for a dynamic environment (Feb 25, 2020) *available at* https://www.gov.uk/government/speeches/the-cma-in-the-2020s-a-dynamic-regulator-for-a-dynamic-environment

was able to impose innovative pressure on the other, which is the primary concern in debates surrounding the issue of killer acquisitions.[701] nowadays. To summarize, the precedents discussed indicate that the competition authorities seem to mainly rely on the continuation and maintenance of innovation competition in granting clearance to the proposed merger transactions.

In this regard, the below precedents of the competition authorities will be assessed as to how the competition authorities approached (i) innovation competition between the parties, and (ii) the ability and incentive to innovate in dynamic markets, as the most credible arguments and significant issues in merger control. Furthermore, due to the dynamic nature of such transactions, innovation mergers concerning online platforms will be analyzed separately under Section 4.3, as the UK's "market share test" for merger control has culminated in several remarkable precedents in this particular industry.

IV. Innovation Considerations by UK competition authorities: Case Review

4.1 Innovation Competition Between the Merger Parties

Getty Images / Digital Vision and Photonica (2006)

The first decision in which the competition authorities endeavored to figure out whether one of the parties to the transaction posed an innovative constraint on the other party was the *Getty Images / Digital Vision and Photonica* decision,[702] although the two targets were not significantly innovative competitors. In that case, the activities of Getty Images Inc. ("Getty Images") primarily focused on the consolidation and distribution of stock photographs to commercial users through multiple licenses. Similarly, Digital Vision Ltd. ("Digital Vision") consolidated and distributed stock photographs, some film clips and music to commercial users through royalty-free licenses, whereas the other target, Photonica, (collectively known as "Photonica"), was a photo-library. In its overall assessment, the OFT raised innovation concerns only within the context of horizontal overlaps between the parties and underlined the role of innovation in the parties' ability to compete. In this

[701] *See* discussion of killer acquisitions in Chapter 1 and *supra note* 120.
[702] Getty/Digital Vision/Photonica, OFT Decision no. ME/1807/05, Feb. 17, 2006, at https://assets.publishing.service.gov.uk/media/555de3ece5274a70840000e4/getty.pdf .

context, the OFT cited the ratio of customers who viewed an undertaking as their first choice in the relevant product-market and linked this to the undertakings' more innovative operations, such as having an e-commerce-enabled website.[703] Furthermore, during its competitive assessment, the OFT hinted at the possibility of the innovations affecting the pricing decisions of a particular undertaking.[704] While the OFT acknowledged the existence of some evidence regarding Getty Images' innovative nature, it took the activities of its competitors and consumer demand into consideration and found no connection between the undertaking's pricing decisions and its product development.[705] In this regard, one may deduce that, if the OFT were to uncover any evidence of a strong link between the innovative actions of an undertaking and its pricing decisions, then this might lead the OFT to find a competition law violation. Thus, innovative ability could carry tremendous significance for many aspects of a competitive assessment, not all of which are always related to technology or product development.

In this case, the OFT primarily assessed the competitive abilities and qualities of Getty Images, and also emphasized the importance of the number of innovative competitors in the relevant market. In relation to Digital Vision and Photonica's positions in the market, the OFT analyzed whether there was sufficient evidence to indicate that their innovative qualities were capable of imposing competitive restraints on other players in the market. The OFT also stated that neither of the other parties "*enhanced their competitive ability by innovation*," as the OFT observed that Digital Vision did not sufficiently develop its own sales operation but instead relied on Getty Images for 40-50% of its distribution, and that Photonica never developed its e-commerce capabilities.[706] Therefore, the OFT concluded that none of the targets were innovators. Consequently, the OFT held that, even if Getty Images were to eliminate one of its competitors posing a substantial constraint through the proposed transaction, the impact of the transaction would be negligible. Furthermore, the OFT stated that such a temporary elimination of a significant competitor would be

[703] *Id.* at 26.
[704] *Id.* at 39.
[705] Getty/Digital Vision/Photonica, OFT Decision no. ME/1807/05, Feb. 17, 2006, at https://assets.publishing.service.gov.uk/media/555de3ece5274a70840000e4/getty.pdf.
[706] *Id.* at 40.

compensated for by substantial entry or expansion in the relevant market.[707] Therefore, the OFT found that this was not a case that may be expected to result in an SLC.

BBC Worldwide/Channel Four/ITV (2009)

In *BBC Worldwide/Channel Four/ITV*,[708] the CC prohibited the formation of a joint venture by the parties, which would operate in the video-on-demand ("VOD") sector. The CC considered that a loss of rivalry at the wholesale level was likely to affect VOD viewers in two ways: (i) Third-party VOD retailers would pass on price increases or adverse commercial terms to consumers due to a possible increase in transaction costs related to purchasing the content from the parties, and (ii) the content offered would be of a lower quality and reduced levels of innovation.[709] In relation to the latter, the CC detected that a loss of rivalry at the wholesale level would enable the joint venture to foreclose access to retailers, given that the parties were active at both wholesale and retail levels, although the CC also determined that they were unlikely to engage in such actions.[710]

Concerning the loss of rivalry at the retailer level, the CC held that the concentration of VOD content in a single entity would result in a decrease of developments and prospective initiatives. In this regard, the merger parties raised the argument that three-fourths of VOD content (corresponding to 90% of all viewings) would be offered to consumers for free; nevertheless, the CC focused on the possibility that paid transactions in the UK's VOD service market were expected to gain more importance over time, as iTunes (Apple's on-demand video and music service) was starting to successfully charge consumers for access to its content at that time.[711] With these considerations in mind, the CC blocked the merger, holding that

[707] *Id.* at 41.
[708] BBC Worldwide Limited, Channel Four Television Corporation and ITV plc - Competition Commission (Feb. 4, 2009), *at* https://webarchive.nationalarchives.gov.uk/ukgwa/20140402192408mp_/http://www.competition-commission.org.uk/assets/competitioncommission/docs/pdf/non-inquiry/rep_pub/reports/2009/fulltext/543.pdf.
[709] *Id.* at 4.131.
[710] *Id.* at 4.133-4.134.
[711] *Id.* at 4.135-4.139.

prohibition was the only viable remedy for addressing the SLC and the adverse competitive effects stemming from the proposed transaction.[712]

Ericsson/Creative (2014)

Following the 2009 prohibition decision in the *BBC Worldwide/Channel Four/ITV* case, the CC evaluated the market for the supply of outsourced linear playout services for channels broadcasting in the UK (such as the BBC, Channel Four, and ITV) in *Ericsson/Creative*.[713] In this assessment, linear playout was defined as a process whereby television content is prepared and compiled into a continuous stream for transmission to the audience, in compliance with the broadcaster's program schedule. Due to Ericsson's previous acquisition of Technicolor, which supplied playout services to ITV and NBC Universal at that time, and Creative's ownership of Red Bee Media ("RBM"), with the customers of the BBC, Channel 4, UKTV, BT Sport, Public Broadcasting Service, Japanese Satellite TV and Box TV, the parties were deemed to be the leading players in the sector. Accordingly, the CC assessed the effects of the proposed acquisition on the customers. Firstly, the CC observed that the main factor for some customers in the choice of their supplier was the fact that they had more complex linear playout requirements compared to others, which created an obvious advantage for the incumbent providers (RBM in this case) to win bids for linear playout services.[714] Noting that the BBC, ITV and Channel 4 were the highest-profile public service broadcasters ("PSBs"), the CC declared that its main concern was whether the PSBs would not be able to benefit from new ideas and innovation in ways that would enable them to best meet their requirements as a result of the proposed transaction's elimination of one of the innovative competitors in the market.

Adopting a more optimistic outlook in comparison to the *BBC Worldwide/Channel Four/ITV* decision above, the CC ultimately found that an increased number of bidders in the PSBs' bidding processes could stimulate new ideas of value for the customers. More specifically, the CC considered that, due to their complex

[712] *Id.* at 5.87-5.92.
[713] Telefonaktiebolaget LM Ericsson and Creative Broadcast Services Holdings (2) Limited, Competition Commission, (Mar. 27, 2014), *at* https://assets.publishing.service.gov.uk/media/5342bd11ed915d630e00002f/Final_report__PDF__601_Kb_.pdf .
[714] *Id.* at 8.52-8.65.

requirements, the transaction would eliminate one of the two most innovative providers to the PSBs, but nevertheless decided to grant a Phase 1 clearance to the transaction.[715] In its analysis, the CC concluded that the multi-stage nature of bids could mitigate the negative outcomes of the transaction to a certain extent, by motivating other competitors to take part in the PSBs' bids, enabling providers to bid as forcefully as the lost bidder and to generate ideas during the progress in order to be awarded the bid.[716] It is also important to note the dissenting opinion about the loss of innovation competition in BBC bids accounting for 15-25% of industry revenues in the market, due to the fact that one of a few qualifying competitors to the BBC, offering the largest contract concerning playout services, had left the market.[717]

MasterCard/VocaLink (2017)

Following the CC's evaluation of the number of bidders in the *Ericsson/Creative* case in 2014, the CMA also assessed competitive concerns stemming from the fact that a merger was contemplated between two companies, out of what was already a small number of bidders, in its *MasterCard / VocaLink* decision.[718] In this case, MasterCard, a provider of financial services with a focus on branded four-party payment credit and debit card schemes, acquired sole control over VocaLink, a provider of central infrastructural services ("CIS") to three UK interbank payment systems (namely, Bacs interbank payment system, Faster Payments Service ("FPS") and the LINK ATM network ("LINK"). As both MasterCard and VocaLink offered ATM switching infrastructure through their proprietary networks, the CMA firstly observed that VocaLink, Visa and MasterCard were the strongest bidders at LINK's tenders for

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[715] *See* Competition & Markets Authority: A Quick Guide to UK Merger Assessment (2014), *available at* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/288677/CMA18_A_quick_guide_to_UK_merger_assessment.pdf at 2.7-2.8: "Phase one is the initial assessment stage where the CMA determines whether it believes that the merger results in a realistic prospect of a substantial lessening of competition (SLC). If so, the CMA has a duty to launch an in-depth assessment (Phase two), although merging parties may offer to modify aspects of the transaction to 'remedy' any competition concerns identified (known as Undertakings In Lieu (UILs)), thereby obtaining a resolution at Phase one, conditional on acceptance of the remedies. At Phase two, generally limited to twenty-four weeks, a CMA panel of independent members conducts an in-depth investigation to assess if a merger is expected to result in an SLC. If an SLC is expected, the CMA decides upon the remedies required. Such remedies may include prohibiting the merger or requiring the divestiture (sale) of parts of the business."

[716] Telefonaktiebolaget LM Ericsson and Creative Broadcast Services Holdings (2) Limited, Competition Commission, (Mar. 27, 2014), at https://assets.digital.cabinet-office.gov.uk/media/5342bd11ed915d630e00002f/Final_report__PDF__601_Kb_.pdf .

[717] *Id.* at p. 9-10.

[718] Mastercard UK Holdco Limited/VocaLink Holdings, CMA - Anticipated acquisition by Mastercard UK Holdco Limited of VocaLink Holdings Limited (Jan. 30, 2017), at https://assets.publishing.service.gov.uk/media/588f2c1fed915d4535000041/mastercard-vocalink-ftd.pdf .

CIS.[719] Since the LINK scheme was also a competitor against MasterCard in the ATM transaction services market, and since VocaLink acted as the provider of ATM switching services to LINK for its ATM transaction services, the CMA evaluated MasterCard's ability and incentive to reduce or prevent innovation through its prospective ownership of the messaging standard known as "LIS5," which was owned by VocaLink at that time and used in the central infrastructure for the LINK scheme.[720] The CMA found that MasterCard would be able to foreclose LINK from innovative activities through its intellectual property rights on its competitor's messaging standard (LIS5) used in the provision of ATM switching services, amounting to partial input foreclosure, and that LINK's endeavors to innovate may be leaked to MasterCard, since any innovation for LINK users required its submission to VocaLink in advance, and determined that this would probably diminish any competitive advantage of LINK over MasterCard.[721] On the other hand, the CMA also found that there was no incentive for this strategy, given that the merged entity would still be evaluated and rise or fall on the basis of its innovations, and a poor performance on that front would affect both VocaLink and MasterCard, as LINK's members were also MasterCard's customers.[722]

As VocaLink's "PayPort" product was used in FPS services, the CMA proceeded to evaluate MasterCard's post-transaction measures to prevent or hinder innovation in new FPS services in order to favor its principal products and services. Observing that other providers were available to pose a competitive constraint on MasterCard in the provision of access to FPS services, and finding that its contracts substantially limited VocaLin''s pre-transaction ability to change the central infrastructure and that any change implemented in the central infrastructure was open to all FPS users without any discrimination, the CMA expressed its view that the merged entity would not have the ability to prevent or impede innovation at the central infrastructure level.[723]

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[719] *Id.* at 10.
[720] *Id.* at 267- 274.
[721] *Id.*
[722] *Id.* at 275-279.
[723] *Id.* at 328-338

Aside from these innovation considerations, the CMA accepted undertakings (*i.e.,* commitments) in lieu of reference to the transfer of intellectual property rights relating to Link LIS5 messaging standards to Link Scheme Limited, granting a new supplier of CIS to LINK with access to VocaLink's communication infrastructure, and payment of a confidential amount to LINK members to compensate them for their switching costs.[724] The CMA finally held that these undertakings were sufficiently comprehensive to mitigate or prevent any SLC arising from the transaction.

Aviagen Group/Hubbard Holding (2018)

In its *Aviagen Group/Hubbard Holding*,[725] the CMA scrutinized the innovation competition between the parties to the transaction, whereby Hubbard Holding SAS, one of the leading chicken parent stock suppliers in the UK, was acquired by Aviagen Group Holding Inc., which was involved in the same business. The CMA found that the parties' activities overlapped in the supply of chicken parent stock. In its assessment of the relevant product-market definition, the CMA determined that the demand-side substitutability between conventional chicken parent stock and slow-growing chicken parent stock was limited. Therefore, the CMA separated the frames of reference for the product and defined the relevant product-markets as (i) "the supply of conventional chicken parent stock," and (ii) "the supply of slow-growing chicken parent stock."[726]

Evaluating the horizontal unilateral effects in the supply of conventional chicken parent stock, the CMA considered that innovation was an essential element of competition in that market, particularly in terms of the impact of chicken parent stock innovations on the cost of meat production, and determined that such innovation affected the cost of meat manufacturing for suppliers. Accordingly, the CMA determined that customers tended to switch meat sources if the quality of the products changed, and concluded that this state of affairs led to strong competition between the suppliers of conventional chicken parent stock in the UK. Although the CMA observed that Hubbard was able to improve its conventional chicken parent

[724] *Id.*
[725] Aviagen/Hubbard CMA, Anticipated acquisition by Aviagen Group Holding Inc. of Hubbard Holding SAS Decision on relevant merger situation and substantial lessening of competition (Feb. 28, 2018), *at* https://assets.publishing.service.gov.uk/media/5a9592ec40f0b67aa5087b04/aviagen-hubbard-decision.pdf .
[726] *Id.* at 3.

stock product, it conducted further assessments as to whether the level of this activity could exercise a constraint on Aviagen through investments in R&D.[727] In this case, Aviagen submitted that it would be in a position to develop certain technologies through Hubbard, such as CT scanners and genomics, in the post-merger world. Hubbard also contended that the merged entity would be likely to become more innovative in the relevant market.[728] Some customers also noted that Hubbard needed to increase the competitiveness of its offerings.[729] In the final part of its assessment on the unilateral effects of the transaction, the CMA appraised Hubbard's innovative constraints on Aviagen and held that Hubbard and its R&D activities would not be able to pose a competitive constraint on Aviagen's innovations in the relevant market in the absence of the acquisition.[730] The CMA then concluded that the transaction was unlikely to result in an SLC, and accordingly, granted clearance to the proposed transaction.[731]

4.2 Dynamic Markets and the Ability and Incentive to Innovate

Bayard Capital / Landis & GYR (2004)

One of the primary sectors in which the competition authorities have relied upon innovation-related factors was the electronics sector. The cAs' precedents, ranging from early 2004 to date, have demonstrated that they have placed considerable importance in their assessments on the weight that innovation carries in this particular sector. Although innovation has been limited to sector-based observations, the competition authorities firstly assessed the dynamic nature of the electronics sector and innovation in the *Bayard Capital / Landis & GYR* decision.[732] In that case, the OFT reviewed the acquisition of Landis & Gyr ("Landis") by Bayard Capital Partners Pty Ltd ("Bayard"), where Bayard was the parent company of "Ampy," which was the largest Australian manufacturer of electricity meters. Ampy's activities covered both the sub-assembly and the final assembly of residential electricity

[727] *Id.* at 51-54.
[728] *Id.* at 55-56.
[729] *Id.* at 58.
[730] *Id.* at 60-61.
[731] *Id.* at 86.
[732] Bayard/Landis. Completed acquisition by Bayard Capital Partners Pty Ltd of Landis & GYR OFT Decision no. ME/1242/04, (Nov. 15, 2004), *at* https://assets.publishing.service.gov.uk/media/555de461ed915d7ae500011c/bayard.pdf .

meters, including electronic pre-payment meters.[733] On the other hand, Landis manufactured electromechanical, electronic-credit and pre-payment electricity meters and gas meters, including pre-payment meters, energy data acquisition, processing software, and systems ripple control receivers.[734] The OFT stated that the activities of the transaction parties overlapped in the market for the manufacture of electricity and gas meters,[735] and accordingly, defined the relevant product market as "electricity meters." This decision is particularly noteworthy because, when listing the factors that affect the analysis of market shares in the relevant product-market, the OFT remarked that "innovation is an important dimension of competition in this sector [electronics]."[736] Furthermore, under the section entitled "*Entry using new technologies*," the OFT discussed the role of new innovative technologies in market dynamics. In this context, the OFT first emphasized that "*Central to any consideration of the competitive effects of this merger is the role of innovation in the electricity prepayment meter sector.*"[737] The OFT also underlined the role of innovation by pointing out that new and innovative technologies facilitated securing larger market shares, and that innovation also had the potential to transform a sector. A crucial point here was that the OFT did not recognize or acknowledge any advantages of the market incumbents in terms of access to or development of technology. Thus, the OFT seemed to consider that, where technology and innovation were strong and formidable factors in a certain relevant product-market, all of the players in the market, be they new entrants or long-term players, operate on a level playing field. The OFT then concluded that *"[….] past evidence of entry, in particular by a superior new technology offering additional customer benefits, indicates that competition can and has occurred and that entry and the threat thereof will act as a constraint on the merged entity."*[738] While common access to technology

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[733] *Id.* at 1.
[734] *Id*.
[735] *Id.* at 6.
[736] OFT further endorsed this approach in its other decisions as well. *See also Francisco/G International*. Completed acquisition by Francisco Partners L.P. of G International Inc. OFT Decision no. ME/1449/04, Mar. 22, 2005, *available at* https://assets.publishing.service.gov.uk/media/555de425e5274a74ca0000f5/francisco.pdf . In this case, the OFT underlined again that the electronics sector was characterized by innovation and technological development.
[737] Bayard/Landis, Completed acquisition by Bayard Capital Partners Pty Ltd of Landis & GYR OFT Decision no. ME/1242/04, (Nov. 15, 2004), *at* https://assets.publishing.service.gov.uk/media/555de461ed915d7ae500011c/bayard.pdf at 60.
[738] *Id.* at 65.

and innovation levels the playing field for market players, it may also act as an additional restriction on the activities of the parties.

Another aspect of this case in which the OFT assessed the effects of innovation concerned the possible coordinated interaction between the parties. The OFT determined that any coordinated effect would be unlikely to occur when the undertakings in question were found to be at different stages of innovation.[739] Arguably the OFT had considered all players to operate on a level playing field before, their levels of innovation were now deemed to constitute a differentiating effect. Having established that the market for electricity meter supply was a dynamic one, and concluded that the emergence of new meter technologies shaped the relevant market, the OFT cleared the transaction after its Phase 1 assessment.

Similar to this decision on *Bayard Capital/Landis & GYR*, in Adobe's acquisition of Macromedia,[740] the OFT stated that, for existing players who planned for a change in their market positions or devised product improvements, specific entry barriers (such as R&D costs) might be less relevant. According to the Phase 1 assessment, the case was cleared.

Research Machines/Sentinel (2004)

In its *Research Machines Plc/Sentinel Products Ltd* decision,[741] the OFT reviewed the acquisition of Sentinel Products Ltd ("Sentinel") by Research Machines Plc ("RM"), once again in the electronics sector, since the competition authorities categorized software products under the same classification. In this case, RM was a supplier of information and communication technology software, systems and services, providing a wide variety of educational establishments with educational services, and Sentinel also operated as a supplier of computer software. The OFT defined the relevant product market as "the Network Management Software

[739] *Id.* at 90.
[740] Adobe/Macromedia, Anticipated acquisition by Adobe Systems, incorporated of Macromedia, Inc. OFT Decision no. ME/1811/55, (Nov. 16, 2005), *at* https://assets.publishing.service.gov.uk/media/555de437e5274a7084000110/adobe.pdf .
[741] Research Machines/Sentinel. Completed acquisition by Research Machines plc of Sentinel Products Ltd. OFT Decision no. ME/1107/04, (Jul. 22, 2004), *at* https://assets.publishing.service.gov.uk/media/555de442ed915d7ae200011d/researchmachines.pdf .

("NMS")," encompassing the supply of education-sector NMS for each category of primary, secondary and tertiary education institutions in the UK.[742]

While assessing the share of supply, the OFT found that RM would represent nearly half of the total UK supply of the relevant product in both the primary and secondary sectors in question in the post-merger market and close to a quarter of the supply in the tertiary sector. In this context, the evidence on file and the OFT's own findings indicated that, "*a large proportion of both primary and secondary schools [….] rely upon OS network tools, providing an incentive to continue to price and innovate at a level that would persuade such customers that dedicated NMS is a value-added proposition*." This assessment revealed the two aspects in which the OFT considered and evaluated innovation: (i) the parties' ability to innovate, and (ii) effect of innovation on consumer preferences. Such a two-dimensional approach demonstrated that, even in the early stages of technological development and the evolution of innovation concerns in competition law, the OFT deemed innovation to constitute an essential point of consideration in its merger control regime. Furthermore, it is worth noting that the OFT handled innovation considerations in terms of both horizontal and vertical concerns in this case. In terms of horizontal concerns, the OFT's focus fell upon the assessment of shares of supply, and the OFT examined the distribution of supply shares in terms of prices, functionality, and consumer approach.[743] Upon concluding that alternative NMSs appeared in the market and that RM was likely to be unable to foreclose competition, given that NMS products could emerge very quickly in such a dynamic market the OFT cleared the transaction according to its Phase 1 review. [744]

Thermo Electron/GV (2006)

Building on its previous analyses, in the *Thermo Electron / GV* case, the OFT used innovation considerations as a central element in its competitive assessment.[745] In this case, Thermo Electron Manufacturing Limited ("Thermo") was active in the

[742] *Id.* at 3.
[743] *Id.* at 4.
[744] Although this section is focused on horizontal concerns, it may be of benefit to mention here that the OFT's evaluation of the vertical and conglomerate issues did not find sufficient evidence to support a foreclosure theory with regard to the said merger. *See* Research Machines/Sentinel *supra* note 741 at 5.
[745] Thermo/GVI, Completed acquisition by Thermo Electron Manufacturing Limited of GV Instruments Limited. OFT Decision no. ME/2669/06, Dec. 15, 2006, *available at* https://assets.publishing.service.gov.uk/media/555de3fbe5274a74ca0000dd/Thermo.pdf .

markets for various analytical instruments, scientific equipment, services, software solutions and consumables at the global level, while GV Instruments Ltd ("GVI") carried out activities related to the worldwide supply of mass spectrometers. As the parties' activities horizontally overlapped in the market for the supply of mass spectrometers ("MS"), the OFT defined this as the relevant product-market, acknowledging that the market in question was global.

For innovation, the OFT first considered it during its assessment of the horizontal overlaps in the case at hand. In this context, the OFT underlined the importance of future product innovation and emphasized that this was one of the areas in which the transaction subject to the assessment could have possible adverse effects. This is evinced in the OFT's decision in this case, where it stated its belief that the relevant transaction could result in the diminishment of the rate of innovation, given that the transaction would create a (near) monopoly in the product segments of both gas isotope ratio mass spectrometers ("IRMS") and thermal ionization mass spectrometers ("TIMS"), a duopoly in the market for multi-collector-inductively coupled plasma MS ("MC-ICP-MS").[746] Therefore, the OFT decided to refer the case to the CC.

Contrary to the OFT, the CC defined four narrower separate markets, namely (i) Gas IRMS, (ii) TIMS, (iii) MC-ICP-MS, and (iv) Noble Gas MS. Moreover, the CC determined that product development was a significant driver of competition in the IRMS product segment, due to specific recent innovations, while also acknowledging that this was a mature product-market.[747] Furthermore, the markets of Gas IRMS, TIMS and MC-ICP-MS, the CC established that a new entrant into these markets would need access to know-how, expertise and investments in R&D, which constituted significant barriers to entry from the CC's perspective.[748] The CC held that Thermo would have acquired a significantly higher market share in the Gas IRMS market, and a monopoly position in the TIMS market, following the consummation of the transaction.[749] Therefore, the CC held that the transaction would be likely to result in an SLC, and ordered Thermo to sell either the whole GVI

[746] *Id.* at 38.
[747] *Id.* at 4.7.
[748] *Id.* at 5.41-5.45.
[749] *Id.* at 15-16.

business or those assets relating to the supply of Gas IRMS and TIMS instruments, as the remedies for the expected SLC.

One can assume from this case that the competition authorities consider it very unlikely for monopolies and duopolies to have any incentives to innovate.

Cirrus Logic/Wolfson (2014)

In another decision concerning the electronics sector, the CMA examined a transaction between Cirrus Logic Inc. ("Cirrus"), a developer and supplier of semiconductors, and Wolfson Microelectronics plc ("Microelectronics"), a designer and supplier of semiconductors worldwide. The CMA left the exact market definition open and stated that it would focus its assessment on the level of competition between the parties and their incentives to innovate.[750] In this context, the *Cirrus Logic / Wolfson* decision emphasized that innovation in product development was a "*key feature of the competitive dynamics in the marketplace.*"[751] The CMA underlined that the players in the market are driven with the need to innovate in order to be able to conclude contracts for "*the next generation of consumer electronic devices.*"[752] In this context, the CMA articulated that, since innovation was an important driving factor for parties in their rivalry for securing contracts, it would also examine the merger's possible effects on innovation in the relevant market.[753] Thus, following these assessments on innovation in terms of product development, the CMA then underlined innovation as one of the primary parameters of competition concerning the transaction, as the parties' activities were related to a rapidly growing market, *i.e.,* a dynamic market. In this context, while making its assessments regarding the shares of supply in the market, the CMA found that, even though the static share of supply data in these types of innovative markets was limited, (i) there were still multiple competitors operating even in markets defined by the narrowest approach to the product definition, and (ii) those competitors, despite having significantly lower supply shares, displayed sufficient expertise in the development and supply of high-

[750] Cirrus Logic Inc/Wolfson Microelectronics Plc, CMA - Anticipated acquisition by Cirrus Logic Inc of Wolfson Microelectronics Plc (ME/6461/14, Nov. 7, 2014) *available at* https://assets.publishing.service.gov.uk/media/545ce6f440f0b6130e00001c/Cirrus-Wolfson_decision.pdf at 29.
[751] *Id.* at 6.
[752] *Id.*
[753] *Id.* 29.

end products.[754] Further, the CMA also conducted its own market research and found that some customers of the parties (with whom they worked closely) were supporting the development of competing products, 3 to 4 years into the future.[755] Accordingly, the CMA granted a Phase 1 clearance to the transaction.

Akzo Nobel/Metlac (2015)

In the OFT's *Akzo Nobel/Metlac* decision,[756] which concerned the engineering sector, Akzo Nobel N.V. ("Akzo Nobel"), a global manufacturer and supplier of performance coatings, decorative paints, and specialty chemicals, acquired Metlac Holding S.r.l ("Metlac"), which was active in the manufacture and supply of metal packaging coatings through its subsidiaries. Akzo Nobel's and Metlac's scope of business overlapped in the manufacture and supply of metal packaging coatings, and while the OFT considered defining the relevant product market as "metal packaging coatings worldwide," it nevertheless decided to leave the precise market definition open.[757] In its assessment, the OFT evaluated Metlac's innovative characteristics, and since the company was considered the most or the second most innovative player in the market from the perspective of third parties, the OFT concluded that Metlac was a strong competitor.[758] Here, the OFT touched upon several points, including the assessment of Metlac's (i) technological edge in innovative products,[759] and (ii) its innovative capability, interpreted in relation with its research and development capabilities.[760] In line with its previous assessments, the OFT again evaluated innovation considerations in terms of product characteristics yet in light of the parties' incentives and ability to innovate. In addition to its previous approaches, the OFT also conducted a slightly more detailed assessment of innovation in terms of new entries into the relevant market. Namely, the OFT declared in this case that a new undertaking was able to enter the market through its ability to utilize innovative technologies.[761] In light of the high switching costs in the

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[754] *Id.* 44.
[755] *Id.* 48.
[756] Akzo Nobel N.V./Metlac Holding S.R.L Anticipated acquisition by Akzo Nobel NV of Metlac Holding S.R.L OFT Decision no. ME/5319/12, (May 23, 2012), *at* https://assets.publishing.service.gov.uk/media/555de2f1e5274a74ca00004f/AkzoNobelMetlac.pdf .
[757] *Id.* at 38, 43.
[758] *Id.* at 74, 75.
[759] *Id.* at 68-75.
[760] *Id.* at 73.
[761] *Id.* at 119.

relevant market (due to competition in bids and contracts), the OFT referred the case to the CC upon its Phase 1 examination.

During the Phase 2 assessment, the CC's review included an even more detailed examination of innovation considerations.[762] The CC first acknowledged that innovation was a part of product development,[763] and noted that one of the likely reasons for loss of competition between competitors was a non-price element, such as innovation.[764] In this context, some of the consumers that the CC interviewed expressed concern over the adverse effects on innovation that could be caused by the said merger.[765] The CC, further into its assessment, remarked that, since the parties to the transaction were extremely close competitors, a reduction in competition for innovation between the two would result in a similar lessening of innovation.[766] The CC provided a detailed assessment in Appendix G of its Final Report,[767] wherein it considered (i) the innovative abilities of Metlac, and (ii) the innovation in the relevant market within the context of the significant changes expected in the industry. One can understand from the CC's references, the primary reason of its intense focus on the issue was the statements gathered from third parties, that expressed the fundamental role of innovation in terms of the relevant products and the parties in question.[768]

In this context, the CC additionally reviewed the statements received from the parties and their internal documents. In its quest to determine the significance of Metlac's level of innovativeness to the competitive dynamics of the market for the supply of metal packaging coatings, the CC found that the quality of the production process was not a decisive factor.[769] The CC declared that it did not aim to conduct a comparison of the relative innovation levels of Metlac and Akzo Nobel, as the consumers expressed the view that both parties provided high-quality products and that neither was inferior to the other, which could have led the CC to conclude that Metlac would be able to continue its innovative practices in the aftermath of the

[762] *Id.*
[763] *Id.* at 29.
[764] *Id.*
[765] *Id.* at 55.
[766] *Id.* at 53.
[767] *Id.* Appendix G.
[768] *Id.* at 4-9.
[769] *Id.* at 18.

transaction.[770] Nonetheless, the CC held that the transaction would result in an SLC within the market for the supply of metal packaging coatings by end-use with respect to (i) beer and beverage coatings, (ii) food coatings, (iii) caps and closures coatings, and (iv) general line coatings in the UK, and therefore prohibited the merger, given that Metlac's competitive constraint on Akzo Nobel would be destroyed as a result of the transaction.

BT Group / EE Limited (2016)

The CMA conducted a comprehensive evaluation regarding the ability and incentive of transaction parties to prevent innovation competition in its *BT Group/EE Limited* decision.[771] This transaction was related to the full acquisition of EE Limited, a joint venture between Orange and Deutsche Telekom, which was one of four mobile network operators ("MNOs") in the UK, by the BT Group, which provided telecommunications products and services to retail customers along with local loop or local access network services through its business division named "Openreach." The CMA found that the parties' activities overlapped in the provision of mobile and fixed communications services to retail customers. Defining the relevant product-markets in this case as (i) "retail mobile," (ii) "wholesale mobile," (iii) "mobile backhaul," (iv) "wholesale broadband," and (v) "retail broadband,"[772] the CMA *inter alia* considered the effects on innovation by examining the question of whether Openreach could foreclose downstream MNOs by frustrating or impeding innovation in the mobile backhaul market.[773]

The CMA set forth the framework for this competition analysis as discrimination against rival MNOs in relation to the following: (a) the development of small cells, (b) the development of Cloud-RAN, (c) the development, more generally, of new Openreach products, and (d) other strategic decisions (*i.e.,* the possibility that the BT Group could prioritize the design of its fiber footprint to support its own mobile demand, at the expense of rival communication providers).[774] With the development of small cells, the CMA acknowledged the presence of alternative suppliers of

[770] *Id.* at 20.
[771] BT Group plc and EE Limited, CMA - Anticipated acquisition by BT Group plc of EE Limited (Jan. 15, 2016), *at* https://assets.publishing.service.gov.uk/media/56992242ed915d4747000026/BT_EE_final_report.pdf .
[772] *Id.* at 8.1-8.3.
[773] *Id.* at 16.59-16.98.
[774] *Id.* at 16.64.

backhaul solutions for small cells and determined that Openreach was unlikely to impede rival MNOs' deployment of small cells by failing to provide suitable backhaul products.[775] With respect to the development of Cloud-RAN, the CMA held (i) that Cloud-RAN was just one of the possible evolutions of current architectures, (ii) that the technology upgrades from LTE to LTE-Advanced could also deliver efficiency benefits and capacity uplift, rather than Cloud-RAN, and (iii) that Cloud-RAN was used only in urban areas where alternative providers of backhaul were usually available.[776] Regarding the development, more generally, of new Openreach products, the CMA found that the BT Group would face Ofcom's enforcement actions against discriminatory behavior, as per the Statement of Requirements, which had been undertaken by the BT Group before Ofcom, concerning the operation of a new product development process monitored by BT's Equality of Access Board under the regulatory framework introduced by Ofcom.[777] Concerning other strategic decisions, the CMA determined (i) that there were often competing providers of backhaul alternatives to the BT Group in urban areas where 80% of the small cells, which MNOs require connecting to fiber in new radio sites, would be deployed.[778] Therefore, in light of its in-depth analysis of innovation concerns, the CMA concluded that none of these concerns were sufficient to block the acquisition, and therefore granted a Phase 2 clearance to the transaction.

In summary, the Ofcom undertakings mentioned above contemplated the BT Group's obligation to operate its Openreach division under a separate organization and to provide its new products (and any changes to such products) to all communication providers on fair and equal terms.[779] These undertakings may very well be the reason that the CMA did not require further undertakings from the BT Group, and found sufficient reason to believe that regulation would act as a deterrence to foreclosing competition.

[775] *Id.* at 16.65-16.81.
[776] *Id.* at 16.82-16.85.
[777] *Id.* at 16.86-16.93.
[778] *Id.* at 16.94-16.98.
[779] *Id.* at 4.16-4.45.

Tobii AB / Smartbox & Sensory (2019)

A critical indicator of the increasing role of innovation considerations in the CM''s competitive assessments arises within the context of the *Tobii AB / Smartbox* case.[780] In its issues statement, the CMA had made the following request in terms of its future assessment: "*In particular, we would welcome any new evidence on the drivers of innovation and product development in the industry, and on any competitive constraint that has not been captured at phase 1*,"[781] indicating that innovation would play a further and predominant role in the CMA's final decision on the merger transaction, and the expectation was that there would be a focus on the importance of the number of competitors in the market and its effect on product innovation, as the CMA, under its horizontal assessment, explicitly stated that "*The concern is that the removal of one party as a competitor could allow the Parties to […] reduce innovation*."[782]

Following in depth investigation and assessments, the CMA blocked Tobii AB's acquisition of Smartbox, on the ground that the transaction would lead to higher prices and/or lower quality for relevant communication solutions offered by the parties, as well as upstream and downstream foreclosure of competitors, ordering a full divestiture remedy concerning sale of Smartbox to a suitable purchaser to be approved by CMA.

Tobii and Smartbox both supply augmentative and assistive communication ("***ACC***") solutions globally, which is defined as "*communication aids that cater the needs of those who may find communication difficult for a number of reasons (...) such as cerebral palsy, learning disability or autism (...)*".[783] The CMA found that the parties' activities overlap in the supply of dedicated ACC solutions which comprise of the following four components: (i) dedicated AAC hardware, (ii) AAC software, (iii) access means (in case users cannot control the device solely through the touch

[780] Tobii AB/Smartbox & Sensory; CMA Completed acquisition by Tobii AB of Smartbox Assistive Technologies Limited and Sensory Software International Ltd Final Report (Aug. 15, 2019) *available at* https://assets.publishing.service.gov.uk/media/5d5d1800e5274a0766482c45/Final_Report2.pdf?_ga=2.117248645.2038125553.1566932195-923601075.1560421042 .
[781] Tobii AB/Smartbox & Sensory CMA Completed acquisition by Tobii AB of Smartbox Assistive Technologies Limited and Sensory Software International Ltd Issues Statement, at para. 26 *available at* https://assets.publishing.service.gov.uk/media/5c752294ed915d3551b9aff9/Tobii_Smartbox_Issues_Statement.pdf .
[782] *Id*. at para 24.
[783] *Tobii AB/Smartbox & Sensory; Final Report (Aug. 15, 2019)*. at para. 2.

screen, an AAC solution includes a means of access such as switch or an eye gaze camera and (iv) customer support such as technical support and training.[784] Dedicated AAC solutions are generally procured by organizations funding purchases of these devices on behalf of end-users such as national health service authorities, local authorities and charities etc. Moreover, the parties also offer individual components of dedicated AAC solutions listed above in the market. In this regard, Tobii sells eye gaze cameras and Smartbox licenses its AAC software, namely Grid, to its components.[785]

Based on this, the CMA defined the relevant markets as follows: (i) supply of dedicated AAC solutions in the UK, (ii) the upstream supply of AAC software worldwide and (iii) upstream supply of eye gaze cameras in AAC applications worldwide.[786] As the parties offer certain components of dedicated AAC solutions in the market, the CMA also assessed the vertical effects of the transaction along with analyzing horizontal unilateral effects. As to the innovation considerations, the CMA presented its detailed assessments when evaluating the potential vertical effects of the transaction, particularly because of Smartbox's Grid software, which is considered to have a strong position in the AAC software space.[787] In this regard, the CMA based its vertical theories of harm on three pillars, namely (i) input foreclosure of Smartbox's Grid software, (ii) customer foreclosure of eye gaze camera competitors and (iii) input foreclosure of Tobii's eye gaze cameras and for each of them, assessed the ability and incentive of the merged entity to foreclose competitors based on the information submitted by the parties as well as third parties.[788]

In this regard, in assessing the likelihood of customer foreclosure of Tobii's eye gaze camera competitors, the CMA stated that eye gaze camera suppliers depend on compatibility with ACC software, especially the Grid, in order to compete in the supply of eye gaze cameras in AAC applications, implying that Grid is an important

[784] *Id*. at para. 2.10.
[785] *Id*. at 5.
[786] *Id*. at 6.
[787] *Id*. at para. 6. 15; para. 7.1.
[788] *Id*. at para. 7.2.

input for dedicated AAC solutions suppliers.[789] It also emphasized that there are limited alternatives to Grid. Accordingly, the CMA finds it likely that providers of dedicated AAC solutions may switch to Tobii's eye gaze cameras, if Grid's compatibility with other cameras is limited. On that front, the CMA concluded that the effects of weakening Tobii's rivals in the eye gaze camera space are likely to include reduced innovation and higher prices compared to pre-merger situation. Based on the information obtained from Irisbond, the CMA held that Smartbox's software is considered as a catalyzer for eye gaze camera suppliers in allowing product improvement, fair competition and also innovation and that the transaction would result in the loss of a "*key partner for innovation and for the development of a wider variety of innovative and affordable AAC solutions.*"[790] To that end, the CMA highlighted that partnering with Smartbox is critical for suppliers in enabling innovative solutions in the supply of eye gaze cameras for AAC applications. It also added that the significant investment required for being compatible with alternative AAC software would hamper eye gaze camera supplier's ability to allocate their sources to other innovation studies for AAC applications. Even though Tobii submitted that innovation in eye gaze cameras is driven by the demand of "mass market" consumer electronics and automotive sectors, the CMA did not find Tobii's argument convincing and stated that companies that are not specialized in AAC applications would ignore the needs of the customer base for AAC solutions, which would hamper innovative efforts for dedicated AAC products and harm customers.[791] In fact, fundamental difficulties for eye-tracking are ensuring that it operates efficiently in each position of the head and adjusts to the various movements of the eyes.[792] Since this difficulty concerning the position of the head does not relate to the AAC applications developed for mass-use, the developers would not focus on it and innovate dedicated AAC products.[793]

Regarding the horizontal effects of the transaction, the CMA concluded that both Tobii and Smartbox "*benchmark*" each other and are the main competitors when

[789] *Id*. at para. 7. 133.
[790] *Id*. at para. 7. 136.
[791] *Id*. at para. 7. 136.
[792] *Id*. at para. 7. 135.
[793] *Id*. at para 7. 135.

their products' prices and product range is concerned.[794] Therefore, the merger would impede "*the incentives of the merged entity to engage in R&D and innovate*".[795] On the other hand, Tobii stated innovation incentives are decided at a global level rather than being limited to the UK, where the merged entity has high market shares. Both Smartbox and Tobii engage in global sales and develop their products for customers worldwide.[796] Moreover, each horizontal merger does not necessarily hinder innovation.[797] According to Tobii, the merger would contribute to the customer wellbeing since as a result of the merger, it observed "*falling prices, low profits, and lots of innovation*".[798]

Tobii also argued that the merged entity would be incentivized to innovate due to the competitive pressure in the mainstream technology companies, as well as the relevant regulations in the EU requiring firms to factor in accessibility considerations. However, the CMA did not find these factors sufficient in eliminating innovation concerns, due to their hypothetical nature.

In terms of efficiencies, Tobii asserted that the merger would combine the research and development capabilities of the merged parties, improve R&D, eliminate duplicative R&D, improve integration between hardware and software, and decrease R&D costs.[799] It also stated that the fundamental efficiencies of the merger would be observed over time when the merged entity focuses on complementary R&D capabilities of Tobii's hardware, eye-tracking and Smartbox's software.[800] However, the CMA held that Tobii failed to provide concrete details or evidence supporting its arguments.

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[794] *Id*. at para. 6.61.
[795] *Id*. at, para. 6.62.
[796] Tobii's Response to Provisional Findings, *available at* <https://assets.publishing.service.gov.uk/media/5d10f5dee5274a065e721726/Tobii_response_.pdf>, para. 5(a).
[797] Denicolò, V. & Polo M., "Duplicative research, mergers and innovation," *Economics Letters* 166 C (2018): 56–59 p. 59
[798] Tobii AB/Smartbox & Sensory; CMA Completed acquisition by Tobii AB of Smartbox Assistive Technologies Limited and Sensory Software International Ltd Final Report (Aug. 15, 2019), para. 6.11.
[799] *Id*. at, para. 8.91; In fact, according to Lofaro *et al*, a merger may promote innovation by "*combining different approaches and best practices*" and "*complementary assets*" of the parties. Lofaro, A., Lewis, S. & Abecasis, P. "An Innovation in Merger Assessment: The European Commission's Novel Theory of Harm in the Dow/DuPont Merger" (2017) 32 *Antitrust* 100 , p. 102
[800] *Id,* at para. 8.92; In support of Tobii's defenses, Lofaro *et al* claim that efficiencies related to innovation may occur over time and may be hard to prove. Lofaro *et al*, *supra* 799, at 103.

As to remedies, the CMA found that a partial divestiture where Tobii would be able to retain Smartbox's software business, would not address the competitive concerns. Accordingly, the CMA decided that the only remedy to adequately address the competition concerns would be full divestiture.[801]

After the CMA's decision, Tobii took the decision before the Competition Appeal Tribunal ("***CAT***"). The CAT's judgment evaluated both the merits and the procedure of the decision.[802] CMA's decision was mostly upheld however the CAT quashed part of the CMA decision relating to input foreclosure concerns regarding Smartbox's Grid software, on procedural grounds.[803] Therefore, the CAT's review showed a high degree of deference to the CMA's factual and economic assessment, including its innovation-related considerations.

Do the UK competition authorities` assessments under *Tobii AB/Smartbox* reflect the EU Commission`s novel approach? It seems to be the case. The Commission had introduced its novel theory of harm associated with innovation in the *Dow/DuPont* case.[804] As discussed in the above Chapters in much more detail, in *Dow/DuPont*, the merger was considered to have a considerable influence on innovative competition since it would stifle competition among crop protection providers. In this regard, the Commission drew attention to the fact that the transaction involved a merger between two large and independent *innovators* in the crop protection industry. In that case, the Commission set forth cannibalization concerns as there were overlaps between the parties' several lines of research and early pipeline products in innovation spaces. Due to this cannibalization concern, the transaction was found likely to "*reduce the incentives for the merged entity to continue with both lines of research and early pipeline products with the same intensity as each of the Party would in the absence of the Transaction*."[805] The Commission noted that in case of such overlaps between the lines of research and early pipeline products, the

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[801] *Id,* at para. 10.9.
[802] Healy, M., Vandenborre, I., Motta, G., Depoortere, F., Batchelor, B. "The UK Competition Appeal Tribunal confirms a deferential standard for the Competition Authority in its merger prohibitions (Tobii)" (2020) e-Competitions January 2020, Art. N° 93459, *available at* https://www.concurrences.com/en/bulletin/news-issues/january-2020/the-uk-competition-appeal-tribunal-confirms-a-deferential-standard-for-the, at 1
[803] *Tobii AB (Publ) v Competition and Markets Authority* (2020) Competition Appeal Tribunal, 1332/4/12/19, paras. 11, 22.
[804] Denicolò, V. & Polo M., "The Innovation Theory of Harm: An Appraisal," (2018) *available at* SSRN https://ssrn.com/abstract=3146731, p. 2.
[805] *Dow/DuPont,* European Commission Case M.7932 – (Mar. 27, 2017), para. 3022.

merged entity would have fewer motives to show the same level of effort on innovation compared to the situation where the parties would individually put, which would eventually result in early pipeline products as well as research being discontinued, deferred or redirected. However, the Commission did not specify which products or research would be discontinued, deferred or redirected as a result of the merger; a hypothetical approach that neither the Commission nor the CMA actually allow transaction parties to employ in their defenses – clearly demonstrating the imbalance and lack of reasoning by the regulators.

In response to the Commission's concerns, the parties argued that their cost saving plans are planned to eliminate redundant manufacturing capabilities and not pipeline products, however, the Commission did not accept the parties' arguments, based on the documents collected from the parties showing the parties' objective to eliminate duplicative R&D programs. Similar to *Tobii/Smartbox*, the parties also stated that competitors would react by increasing or maintaining current levels of innovation due to the intense innovation competition in the market and the impact of regulations and that there is no causal link between concentrations and level of innovation. However, the Commission did not find the parties' arguments convincing and re-emphasized the importance of rivalry as an incentive to innovate in the market. As a result, the transaction was approved conditional on the divestiture of major parts of DuPon''s global pesticide business, including its global R&D organisation.

Taken together, there are similarities between the arguments set forth by the transaction parties in both of the cases, on issues such as the impact of regulations, the level of competition, elimination of duplicative R&D studies and efficiencies. However, both authorities have put more emphasis on the elimination of rivalry as a factor that would reduce incentives to innovate and did not find parties` arguments sufficient in eliminating innovation concerns. As the parties are still being held to much more stringent burdens of proof, it is apparent that authorities in the UK have also yet to embrace innovation wholeheartedly.

Nvidia/Arm (2021)[806]

As discussed in Chapter 3 above with regard to the Commission`s approach, the proposed Nvidia/Arm transaction was one of the most crucial cases recently under scrutiny by the CMA, too, with respect to its potential effects on innovation in the semiconductor industry as well as national security implications.

Similar to the Commission, the CMA also closely examined the acquisition and in its assessment which was published in August 2021 as part of its Phase I examination[807] emphasized that both NVIDIA and Arm play significant roles in the semiconductor sector. The CMA concluded that the proposed transaction may lead to a *"realistic prospect of a substantial lessening of competition ("**SLC**") and consequently to a stifling of innovation, and more expensive or lower quality products,"* which would inevitably result in the circumvention and enforcement risks and leave the consumers in a worse-off position with lower quality or overpriced products.[808] Upon a detailed examination, the CMA has found that the case raises competitive concerns with regard to the supply of central processing units (CPUs), interconnect products, graphic processing units (GPUs) and systems-on-chip (SoCs) and as well as datacentre servers, Internet of Things, automotive and gaming console applications.[809] The CMA has considered (i) the strength of Arm's software, (ii) absence of alternative IP suppliers for CPUs, and (iii) restrictions for changing the CPU IP suppliers,[810] and concluded that given the unique attributes of Arm's CPU IP such as its "*technical advantages,*" it carries crucial importance for these products and services.

With respect to vertical and conglomerate effects in datacentres, the CMA has underlined that following the completion of the transaction, the merged entity may impede competition in the supply of datacentre CPUs and SmartNICs. As for

[806] Nvidia/Arm Merger Inquiry – Competition Market Authority Statutory timetable and Phase I summary *available at* https://www.gov.uk/cma-cases/nvidia-slash-arm-merger-inquiry.
[807] CMA, 'NVIDIA – Arm: Summary of the CMA's report to the Secretary of State for Digital, Culture, Media & Sport on the anticipated acquisition by NVIDIA Corporation of Arm Limited' (*CMA*, 6 January 2021) *available at* https://www.gov.uk/government/publications/summary-of-the-cmas-report-to-the-secretary-of-state-for-digital-culture-media-sport-on-the-anticipated-acquisition-by-nvidia-corporation-of-arm/nvidia-arm-summary-of-the-cmas-report-to-the-secretary-of-state-for-digital-culture-media-sport-on-the-anticipated-acquisition-by-nvidia-corpo.
[808] *Id*, para 1.8.
[809] *Id.* para. 1.19 and 1.22.
[810] *Id.* para. 1.29.

conglomerate effects, the CMA noted that these products offer *"key and complementary functions in datacentres"*[811] and that the merged entity would have the ability to impede competition (i) by affecting access to each of these products and their *"interoperability",* and (ii) by offering these complementary products only as product-sets thereby forcing the customers to buy all of these products.[812]

In light of CMA's concerns, the parties submitted behavioural undertakings stating that they would apply an open licensing regime and ensure the protection of competitively sensitive information after the acquisition.[813] However, the CMA did not find the parties' explanations sufficient to eliminate its concerns[814] and noted that the vertical foreclosure concerns raised by customers and competitors that responded to the CMA`s investigation, could not be assessed fully under the phase 1 investigation. According to the CMA, the proposed transaction warranted an in-depth investigation on competition grounds, and the Secretary of State on the Department for Digital, Culture, Media and Sport also announced their concerns regarding the deal on national security grounds.[815] Nevertheless, faced with such scrutiny from the various regulatory authorities the parties announced that they had abandoned the proposed acquisition,[816] and the CMA therefore cancelled its merger inquiry on Feb 8, 2022. Considering that approximately 70% of the global population uses products and services that offer or work with technologies developed by Arm,[817] such as the IP licensed for CPUs that are used in mobile devices, embedded devices, datacentres and automobile applications, it is no wonder that the deal is disconcerting to authorities, competitors and customers alike. Google, Microsoft and Qualcomm who heavily rely on Arm's IP expressed their concerns to the US antitrust regulators.[818] Tesla, Amazon and even Samsung Electronics were also said to have strongly

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[811] *Id.* para. 1.22.
[812] *Id.* para. 1.23.
[813] *Id.* para. 1.35.
[814] *Id.* para. 1.36.
[815] CMA Press Release (Aug 20, 2021) *available at* https://www.gov.uk/government/news/cma-finds-competition-concerns-with-nvidia-s-purchase-of-arm.
[816] Nvidia Newsroom Press Release (Feb 7, 2022) *available at* https://nvidianews.nvidia.com/news/nvidia-and-softbank-group-announce-termination-of-nvidias-acquisition-of-arm-limited
[817] CMA, 'NVIDIA – Arm: Summary of the CMA's report to the Secretary of State for Digital, Culture, Media & Sport on the anticipated acquisition by NVIDIA Corporation of Arm Limited' (*CMA*, 6 January 2021), para. 1.3.
[818] McLaughlin, D., King, I., & Bass, D. "Google, Microsoft, Qualcomm Protest Nvidia's Acquisition of Arm Ltd." *Bloomberg* (2021) *available at* https://www.bloomberg.com/news/articles/2021-02-12/google-microsoft-qualcomm-protest-nvidia-s-arm-acquisition

opposed the acquisition due to looming antitrust issues.[819] Chip industry officials and experts have stated that Nvidia's acquisition of Arm would intensify Nvidia's competition with Samsung, Qualcomm and others in self-driving cars and other future technologies, while raising concerns that Arm could increase licensing fees for competitors.[820]

4.3 Online Platforms

Brightsolid / Friends (2010)

Brightsolid/Friends[821] constituted the first online-platform case, whereby innovation was brought under the scrutiny of the UK's competition authorities. The CC has cleared the acquisition of Friends Reunited Holdings Limited, whose subsidiary (*i.e.,* Genes Reunited Ltd) operated a social networking/family history website online, allowing access to family history data, by Brightsolid Group Limited, which operated as an online retailer of data relevant to family history through its subsidiary with the trade name of Find My Past Limited. In defining the relevant product market, the CC observed, first of all, that the UK online genealogy supply chain included four elements, namely: (i) original data holders, which were often public bodies providing private companies acting as digitizers with access to their records; (ii) digitizers, transcribing the records with a short period of practical exclusivity for the use of the relevant data, (iii) retailers, selling the data to end-users, and (iv) end-users, obtaining information through purchases or publicly available sources, or by sharing information with other end-users (constituting "social networking" in the context of this case). As a result of these elements, the CC noted and distinguished between three different aspects of online genealogy services, namely: (i) core data, (ii) non-core data, and (iii) social networking. As a result, the CC found that the parties' activities overlapped only in the provision of core data.[822] Consequently, the CC defined the relevant market as "supply of online genealogy services in the UK," which included investigations of ancestry and family history online.

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[819] Baek, Byung-Yeul, "Tesla, Amazon oppose Nvidia's acquisition of Arm", *The Korea Times*, (2021) *available at* https://www.koreatimes.co.kr/www/tech/2021/08/133_314738.html.

[820] Nellis, S., Horwitz, J, Jin, H "Nvidia's Arm deal sparks quick backlash in chip industry" Reuters (2020) available at https://www.reuters.com/article/us-arm-holdings-m-a-nvidia-industry-anal/nvidias-arm-deal-sparks-quick-backlash-in-chip-industry-idUKKBN2650GT?edition-redirect=uk

[821] Brightsolid Group Limited and Friends Reunited Holdings Limited. Competition Commission (Mar. 18, 2010), *at* https://assets.publishing.service.gov.uk/media/55194c73e5274a142b0003be/555final_report_excised.pdf

[822] *Id.* at 4.1-4.11.

As for the unilateral effects of the transaction, the CC compared the innovation capabilities of the merged entity with one of their competitors' offerings, namely Ancestry.co.uk ("Ancestry"), which was deemed to pose the strongest competitive constraint on the parties, according to the CC's point of view.[823] As a result of its assessment on the unilateral effects of the transaction, the CC held that the merged entity would likely become the biggest innovative competitor against Ancestry, since the transaction would minimize risks stemming from upfront investment costs, and accordingly, trigger a competition in innovation due to the merged entity's product offering emerging as an alternative to Ancestry's offering.[824] This decision is also noteworthy in the sense that the CC had already decided to identify and separate the different types of data before data-related issues had become a priority in the eyes of competition enforcement authorities around the world.

Google/BeatThatQuote (2011)

Section 23(3) of the EA triggered the *Google/BeatThatQuote* merger control investigation, whereby Google acquired BeatThatQuote ("BTQ"), and the parties' combined market shares were calculated to be 30-40%, in the market for the supply of online advertising in the UK.[825] Since Google provided a consumer finance tool as a price comparison site ("PCS") called "Google Comparison Ads," and BTQ operated its consumer finance PCS with a particular focus on mortgages and credit cards, the parties' activities were found to overlap in the supply of consumer finance PCSs in the UK. The OFT considered consumer finance PCSs as two-sided platforms because they acted, by their very nature, as intermediaries between two distinct and unrelated types of customers, *i.e.,* users seeking information and prices on products/services and advertisers looking to promote their products and services to users.[826] Holding that the effects of the transaction (i) on the supply of advertising space on consumer finance PCSs, and (ii) on the supply of all online advertising, were required to be assessed, the OFT began its examination by observing that the parties' combined shares in the market for the supply of advertising space on consumer finance PCSs were very low (*i.e.,* between 0-10%). In relation to the latter

[823] *Id.* at 7, 6.1, 6.37.
[824] *Id.* at 6.37.
[825] Google/Beatthatquote, Completed acquisition by Google Inc of BeatThatQuote. OFT Decision (Jul. 1, 2011), *at* https://assets.publishing.service.gov.uk/media/555de311ed915d7ae200005f/Google-BeatThatQuote.pdf .
[826] *Id.* at 10.

market, the OFT found no basis for a prospective SLC, in line with Google's explanations that (i) several types of competitors would continue to offer online advertising services (for example, AOL as a web portal, Ask.com as a search service provider, Facebook as a social network, and Amazon.com as an online commerce site), (ii) new and expanding entrants posed a constraint on online advertising suppliers, and (iii) emerging technologies would bring about new commercial opportunities, such as location-based advertising and online re-targeting technologies. For these reasons, the OFT concluded that the transaction was unlikely to result in an SLC.

Amazon / The Book Depository (2011)

Similar to the *Google/BeatThatQuote* case, the market-share threshold under Section 23(3) of the EA granted the OFT with jurisdiction over the *Amazon/The Book Depository* transaction.[827] The OFT did not find it necessary to define a relevant market but instead focused its investigation on the retailing of books. In making this determination, the OFT compared the ratio of the parties' sales in different product categories.[828] The OFT also considered multiple surveys submitted both by the transaction parties or consulted *ex officio*, which compared online and offline sales of books and deliberated on their substitutability. The OFT also assessed the activities of the parties, and it was noted that Amazon sold various items online, including books, DVDs, CDs, consumer electronics, and that The Book Depository was an online book retailer that also sold DVDs, CDs, as well as video and PC games. The OFT evaluated whether the transaction would result in "*a realistic prospect of a substantial lessening of competition*."[829]

In its competitive assessment, the OFT conducted its examination under several different headings: (i) prices, (ii) delivery charges, (iii) range of titles, and (iv) potential competition.[830] In doing so, the OFT found that (i) in light of the parties pricing models, the merger would not lead to increases in book prices or delivery charges, (ii) as there were several competitors that offered wide range of titles, the

[827] Amazon/Book Depository, Anticipated acquisition by Amazon.com, Inc. of The Book Depository International Limited. OFT Decision no. ME/5085/11 (Oct. 26, 2011), *at* https://assets.publishing.service.gov.uk/media/555de319e5274a708400006e/Amazon.pdf .
[828] *Id.* at 8.
[829] *Id.* at 127.
[830] *Id.* at 125-153.

transaction would not significantly reduce the number of titles offered, and (iii) even though there were multiple third party concerns, there could be new entrants to the market who would be able to do so in a timely manner. The OFT received numerous complaints from third parties, including several from the competitors of the transaction parties.[831] The OFT addressed these complaints in its decision, but did not find them sufficiently persuasive to restrict this transaction. In conclusion, noting that the parties were not close competitors prior to the transaction, the OFT cleared the transaction upon concluding its Phase 1 assessment and did not choose to refer it to the CC.

Facebook / Instagram (2012)

Section 23(3) of the EA once again triggered a merger control filing for the *Facebook/Instagram*[832] transaction in the UK, due to the fact that Facebook's share of supply in the UK with respect to virtual social networking services exceeded the 25% share threshold, even though Instagram had not yet generated any turnover in the UK. The OFT deemed social networks to constitute two-sided markets, owing to the competition between social networks to increase their user numbers and to attract advertisers, even though the OFT declined to provide a precise product-market definition in this case, since it determined that no substantial competition concerns would arise under any plausible market definition. According to the OFT, (i) actual competition in the supply of photo apps, and (ii) potential competition in the supply of online display advertising, constituted the only theories of harm regarding horizontal issues that needed to be evaluated in this case.[833]

With respect to the former, the OFT observed that there were other competing photo-sharing apps, including Camera Awesome, Camera+, Flickr, Hipstamatic, Path, and Pixable. Considering that Camera Awesome and Hipstamatic had been downloaded more than three times as much as the Facebook Camera app and that Instagram had been downloaded more than forty five times as much as the Facebook Camera app, the OFT concluded that the other competitors would pose a

[831] *Id.* at 118-119.
[832] Facebook/Instagram, Anticipated acquisition by Facebook Inc of Instagram OFT, Decision no. ME/5525/12, on reference given on Aug. 14, 2012, *at* https://assets.publishing.service.gov.uk/media/555de2e5ed915d7ae200003b/facebook.pdf .
[833] *Id.* at 14-29.

much stronger competitive constraint on Instagram than Facebook Camera. In relation to the latter theory relating to online advertising, the OFT expressed its view that Instagram was not likely to compete against Facebook in the short run, given that third-party firms (such as Google, Yahoo, Microsoft, and eBay) appeared to compete against Facebook, especially Google with its 44% market share of expenditures in the global online advertising market.

In the context of vertical issues, the OFT evaluated two distinct theories of harm, namely (i) the foreclosure of social networks competing with Facebook by limiting Instagram users to uploading their photos to Facebook, and (ii) the foreclosure of other photo apps by preventing them from uploading their photos to Facebook.[834] Since the OFT believed that limiting users and preventing them from uploading their photos to other social networks might negatively affect the value of the app, and as a result, pave the way for pushing users to switch to rival social networks, the OFT did not give any credence to the first theory.[835] Regarding the second theory, the OFT determined that Facebook was unlikely to adopt this strategy since it would possibly limit the engagement level of Facebook users. In light of this competition analysis, the OFT concluded that the transaction would not give rise to an SLC and thereby decided not to refer the transaction to the CC's review.

In this case, the *ex-post* assessment under the Lear Report indicates that the OFT should also have analyzed (i) the exclusivity of the user base, and (ii) the platform's size and ability to target ads, in order to accurately assess the competitive harm arising from the transaction.[836] Given that Facebook and Instagram (i) use information and communication technologies, (ii) collect and use data, (iii) benefit from network effects, (iv) provide services to consumers for free, and (v) pursuing advertisement activities, the market definition and the analysis on the closeness of competition, in this case, have been widely criticized, and they have been considered deeply flawed by commentators.[837]

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[834] *Id.* at 30-41.
[835] *Id.* at 36-37.
[836] The Lear Report, at II42-II43.
[837] The Lear Report, at II54; *See also* Wu, T., (2017) Blind Spot: The Attention Economy and the Law, Antitrust Law Journal, Forthcoming, *available at* https://scholarship.law.columbia.edu/cgi/viewcontent.cgi?article=3030&context=faculty_scholarship at 5-6.

Priceline/Kayak (2013)

In the *Priceline/Kayak* decision,[838] Section 23(3) of the EA once again triggered the merger control of a transaction concerning online platforms. In this case, the OFT found that the parties' activities overlapped in the market for the supply of online travel search services to overseas customers searching for UK-based services, with a combined share of 25-35%, even though Kayak's UK turnover did not exceed the thresholds under the turnover test.[839] Priceline.com Inc. ("Priceline") was a holding company of several online travel agencies ("OTAs"), which worked with travel service providers ("TSPs") to provide travel services, such as booking hotels, airlines, and rent-a-cars to consumers. Kayak Software Corporation ("Kayak") was a meta-search site ("MSS") for travel-related needs, which provided a price-comparison service to its customers for hotels, airline tickets, package holidays, and rental cars.[840]

The OFT examined whether the OTAs were separated from the MSSs in terms of the booking functionality.[841] The MSSs did not include a booking functionality; instead, they were designed to direct the customers to OTAs or TSP''s websites. Moreover, the OTAs provided a connection between the customers and the TSPs, which had their own booking functionality. In this decision, the parties submitted and argued that the online travel services sector could be considered as a two-sided market, owing to the channel between the customers searching for travel services (such as hotels and flight tickets.) and the TSPs, which tended to market their travel services.[842] It should be noted that the MSSs could provide the booking services to the customers through an affiliate service provided by an OTA. Therefore, customers would have a chance to book or use travel services without proceeding to the OTAs' or the TSPs' websites. However, this booking functionality was costly and challenging to set up for hotels. Although Kayak provided this booking functionality,

[838] Priceline/Kayak, Completed acquisition by Priceline.com Incorporated of Kayak Software Corporation. OFT Decision no. ME/5882-12, (May 14, 2013), *at* https://assets.publishing.service.gov.uk/media/555de2b6e5274a7084000024/priceline.pdf .
[839] *Id.* at 6.
[840] *Id.* at 1-2.
[841] *Id.* at 22.
[842] *Id.* at 14.

namely “Book Kayak,” to its customers as well,[843] the OFT concluded that there was no horizontal overlap in the booking services.

Even though the OFT did not provide a precise market definition in this case, it referred to two particular markets in its examination: (i) the supply of online travel search services, and (ii) the supply of online advertising services.[844] The OFT stated that there was both a horizontal and a non-horizontal relationship between the MSSs and the OTAs. In its examination of the theories of harm, the OFT determined that the increment in the market for the supply of online travel search services to consumers was minimal.[845] Moreover, the OFT mentioned that there were more significant and close competitors in this particular market. The OFT also assessed the non-horizontal aspect of the transaction in terms of the foreclosure of rival OTAs from the online travel search services to consumers and the foreclosure of online advertising services to the TSPs for Priceline’s ability to use Kayak’s website, especially the search results therein. However, the OFT concluded that (i) consumers could have recognized such biased results, so they would have easily declined to use Kayak’s website, (ii) biasing Kayak’s search results would have caused other OTAs to stop using Kayak’s website, and (iii) there were numerous MSSs to generate traffic to their own websites for the OTAs. For these reasons, the OFT concluded that the transaction in question was unlikely to result in an SLC.[846]

Furthermore, regarding the possible engagement of Priceline in foreclosure activity by raising rivals’ costs, the OFT took into account Kayak’s small market share and thus concluded that the merger did not carry the risk of creating a realistic prospect of an SLC.[847] For the conglomerate concern involving the ability of Priceline to bundle or tie its other brands, the OFT stated the following: (i) Priceline would have a small increment in market share post-transaction, (ii) there would not be any ability/potential to bundle or tie the OTAs, which comprised the majority of Kayak’s customers, and (iii) the TSPs had already signed up to multiple OTAs and MSSs. The OFT, therefore, concluded that there was no realistic prospect of an SLC based

[843] *Id.* at 26.
[844] *Id.* at 15.
[845] *Id.* at 64.
[846] *Id.* at 89-94.
[847] *Id.* at 95-98.

on conglomerate effects.[848] Under this assessment, the OFT decided that the merger was not expected to result in a substantial loss of competition within the UK market.

The researcher believes that the Lear Report had examined this particular case, along with the Expedia/Trivago decision[849] to assess the market outcome. However, the main criticism is based on the OFT`s failure to provide insights as to whether the relationship between the OTAs and the MSSs were vertical or horizontal, as this could have led to an inaccurate assessment of unilateral effects.[850] There is also the fact that the OFT relied too much on the consumer`s ability to discern possible bias, despite the fact that it could be demonstrated that consumers would and did in fact be directed by what was on display. Having said this, the Lear Report also pointed out that while Kayak did show intermediation bias, unlike Trivago, the existence of several other MSSs in the market would help in curbing it.

Motorola/Waze (2013)

As an online service, Google Maps has also been assessed by the OFT from an innovation perspective. In this regard, Google's acquisition of Waze through Motorola (which was owned by Google at the time) triggered the OFT's merger control, once again due to the "share of supply" test under Section 23(3) of the EA. In the *Motorola/Waze* decision,[851] the OFT did not provide a precise market definition, due to the absence of substantial competition concerns, although the parties submitted that the relevant product-market might be broadened from the "provision of turn-by-turn navigation applications for mobile devices" to cover all products and services that offer some form of map-based or navigational service. In light of the parties' activities, namely (i) Google providing map-based services via its Google Maps application, for which Google licenses an application programming interface ("API") to third parties, and (ii) Waze offering a free map application for mobile devices to enable drivers to build and use live maps, real-time traffic updates

[848] *Id.* at 99-103.
[849] In this case, OFT held that the transaction did not qualify for investigation, since none of UK turnover and market share tests has been satisfied: *Expedia/Trivago*. Anticipated acquisition by Expedia of Trivago OFT Decision no. ME/5894/13, Mar. 7, 2013 *available at* https://assets.publishing.service.gov.uk/media/555de2d2e5274a7084000038/Expedia.pdf .
[850] The Lear Report, at II.216-II.220.
[851] Motorola/Waze, Completed acquisition by Motorola Mobility Holding (Google, Inc.) of Waze Mobile Limited OFT Decision no. ME/6167/13 (Nov. 11, 2013), *at* https://assets.publishing.service.gov.uk/media/555de2cfed915d7ae2000027/motorola.pdf .

and turn-by-turn navigation, the OFT evaluated whether the transaction might cause the loss of Waze's constraint on Google as an innovative competitor, and whether the merger may remove Google's incentives to develop their mapping products further and reduce Google's incentives to innovate.

In its competitive assessment, the OFT considered the horizontal effects of the merger within the context of (i) the download and usage figures of the parties' applications, (ii) the closeness of competition between the parties, (iii) Waze's future potential as a disruptive force in the market and as a growing competitive constraint on Google, and (iv) constraints from other competitors.[852]

In relation to these considerations, the OFT ultimately found that (i) that other indicators, such as the functionality of the parties' applications, map quality and content, constituted distinctive evidence in the case, and (ii) that the evidence did not suffice to deem Waze successful in its efforts to attract adequate users for its UK maps and to offer well-developed content in comparison to its competitors, and (iii) that Waze would not emerge as a disruptive force in the UK market, as it could not achieve sufficient scale to benefit from significant and insuperable network effects to enable the future growth and acceleration of its application.[853] In relation to other competitors, the OFT observed that (i) there were a number of competitors to Google in the sector of "turn-by-turn navigation applications for mobile devices," (ii) that the portable navigation devices were unable to efficiently constrain turn-by-turn applications in a competition context; however, they could evolve as a competitive constraint on the parties due to the sector-wide shift towards in-car navigation solutions, and (iii) that static mobile mapping applications may pose only a limited competitive constraint on the parties.[854]

For these reasons, designating Apple Maps as the strongest competitor to Google Maps and noting that the parties were not close competitors, the OFT decided not to refer the transaction to the CC.

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[852] *Id.* at 29-73.
[853] *Id.* at 29-52.
[854] *Id.* at 53-73.

For the market outcome analysis of the case, it is notable that the transaction was not evaluated as detrimental, given that some alternatives exist in the market in question.[855]

Ladbrokes/Coral (2016)

The CMA considered online betting services in its *Ladbrokes/Coral*[856] decision, which was related to the acquisition of Coral, the holding company of a betting and gaming group, by Ladbrokes, which operated betting and gaming business in the UK.

Both Ladbrokes and Coral operated licensed betting offices ("LBOs") in the UK. Ladbrokes and Coral stated that the merger would provide several opportunities (such as faster online growth) and significant synergies with the creation of the UK's largest LBO estate. Ladbrokes and Coral were also two of the largest national LBO operators in the UK, in addition to the other two leading licensed betting shop operators, namely William Hill and Betfred. In paragraph 8 of its final report, the CMA determined that the number of LBOs operated by such leading national LBO operators and their gross gambling yields had remained stable while noting that this industry had shown significant improvement in the online channel. The CMA defined the relevant market as (i) the supply of betting and gaming (together referred to as 'gambling') products, and (ii) the operation of greyhound tracks, in which the parties' activities overlapped.[857]

During its merger analysis, the CMA examined whether the transaction would create any effects on innovation. In the social theories of harm evaluation, the CMA assessed whether there were any losses of competition relating to innovation. The parties claimed that there were limited innovations in terms of the products in the retail betting industry, and the growth of the online channel had an impact on the retail sector.[858] However, based on third parties' evidence and documents, the CMA concluded that the innovations were provided by the LBO operators but developed

[855] The Lear Report at II.138- II.142.
[856] CMA, a report on the anticipated merger between Ladbrokes plc and certain businesses of Gala Coral Group Limit (2016), *available at* https://assets.publishing.service.gov.uk/media/5797818ce5274a27b2000004/ladbrokes-coral-final-report.pdf .
[857] *Id*. at 9 *(Summary)*.
[858] *Id*. at 9.54 *(Findings)*.

by third parties. The CMA set forth that the sources of innovation were not limited to retail competitors, and also declared that the competitive interaction between the parties was not considered as the source of innovation.[859] Therefore, the CMA assessed the role of innovation in the retail sector along with the effect of the online channel and suppliers. As for the theory of harm involving loss of innovation, the CMA then concluded that the parties were not particularly innovative players and decided that the merger was not expected to result in an SLC at the national level under the loss of innovation.[860] Consequently, the CMA accepted the undertakings in lieu which had been offered by Ladbrokes and Gala Coral concerning divesture sales of Ladbrokes or Coral LBOs.[861]

Just Eat/Hungryhouse (2017)

The CA's review of online platforms in the UK continued with the CMA's decision on *Just Eat/Hungryhouse*,[862] where both parties operated a food-ordering marketplace in the UK. Hungryhouse was a subsidiary of the German giant, Delivery Hero, which own several food-ordering marketplaces in various jurisdictions, such as Foodpanda, yemeksepeti.com, and Subdelivery.[863] Holding those food-ordering marketplaces are two-sided in nature since their services relate to two distinct and unrelated groups of customers (*i.e.,* restaurants on one side and consumers on the other), the CMA defined the relevant market as the "supply of online food platforms in the UK."[864] In line with the two-sided nature of the market, the CMA evaluated its sole theory of harm on the loss of a supplier of food-ordering platforms in the UK, *inter alia* on the question of whether customers and restaurants might be harmed through degraded platform functionality and worse user experience, and loss of innovation with respect to the services offered to them.[865] Having obtained the expansion plans of the

[859] *Id*. 44 *(Summary)*.
[860] *Id*. 44-45 *(Summary)*.
[861] Ladbrokes/Gala Coral, CMA - Merger Between Ladbrokes Plc and Certain Businesses Of Gala Coral Group Limited Notice of acceptance Final Undertakings pursuant to §§ 41 and 82 of, and Schedule 10 to, the Enterprise Act 2002, (Oct. 11, 2016), *at* https://assets.publishing.service.gov.uk/media/57fdfb66ed915d25be000000/final-undertakings-and-notice-for-publication.pdf .
[862] CMA, a report on the anticipated acquisition by JUST EAT plc of Hungryhouse Holdings Limited (2017), *available at* https://assets.publishing.service.gov.uk/media/5a0d6521ed915d0ade60db7e/justeat-hungryhouse-final-report.pdf .
[863] Delivery Hero SE (2019) Annual Report, (2018), *at* https://ir.deliveryhero.com/download/companies/delivery/Annual%20Reports/Final_secured_en.pdf .
[864] CMA, a report on the anticipated acquisition by JUST EAT plc of Hungryhouse Holdings Limited (2017), at 7, 4.1-4.36.
[865] *Id*. at 6.96-6.97.

parties' competitors, namely Deliveroo and UberEats, the CMA stated that the actors in the relevant market regularly sought to implement incremental innovations offered to their customers, based on the evidence in the case.[866] In line with this finding, the CMA established that the transaction would not raise an SLC concern.[867] Although the CMA strongly relied on the "failing firm" defense to reach its decision, the approach also reinforces the author`s premise that if the agencies are willing to shoulder the evidentiary burden with regard to innovation defenses and adopt a more symmetrical approach by conducting detailed market analysis of innovation, there can be a balanced outcome in competition enforcement.

Meta/Giphy (2021)

The Meta/Giphy case constitutes one of the prominent examples where the CMA applied the approach under the Revised Merger Guidelines regarding dynamic competition and the preservation of future innovative efforts of the transaction parties. The transaction related to the merger between Facebook, Inc. (now Meta Platforms, Inc.) and GIPHY, Inc. Meta is the largest provider of social media and messaging services in the UK, while GIPHY is considered to be the world's leading provider of free GIFs and GIF stickers.[868] The acquisition was referred to a phase II investigation,[869] following Meta's refusal to offer undertakings.

The CMA found serious concerns both horizontally and vertically and explained that the SLC would occur in "*the supply of display advertising in the UK due to horizontal unilateral effects from a loss of dynamic competition ("Horizontal SLC").*"[870] While reaching this conclusion the CMA gave special consideration to potential innovation efforts. By way of carrying out a counterfactual analysis of the likely future competitive situation on the market, the CMA found that absent the merger, GIPHY

[866] *Id*. at 6.42.
[867] The CMA also heavily relied on Hungryhouse having incurred losses for the last several years, and that Hungryhouse was notably unsuccessful in the areas in which neither Deliveroo nor UberEats operated, so this decision also appears to be a victory for the "failing firm" defence.
[868] Facebook (Meta Platforms) / Giphy, CMA, *Final Report*, para. 4, (2021), at https://assets.publishing.service.gov.uk/media/61a64a618fa8f5037d67b7b5/Facebook__Meta__GIPHY_-_Final_Report_1221_.pdf
[869] Facebook (Meta Platform)/Giphy. CMA, Decision to refer (April 1, 2021) at https://assets.publishing.service.gov.uk/media/60659715e90e074e485062e1/Facebook_GIPHY_-_Decision_to_refer.pdf .
[870] *Id*, at para 10.2(a).

"*would have continued to innovate (and) develop its products and services*…"[871] The CMA also evaluated that *"GIPHY's efforts to innovate and monetise its services prior to the Merger were valuable"* and *"By removing GIPHY as an independent competitor, the Merger has eliminated this form of 'dynamic' competition."*[872]

The CMA also stated that although there may be uncertainty regarding the outcome of innovation efforts that would be made absent the merger, this "*does not preclude the CMA from assessing the impact of a merger on that dynamic process."*[873] Ultimately, in order to address the concerns relating to significant lessening of competition, the CMA required Meta to divest GIPHY to a suitable purchaser. Following Meta`s appeal, the Competition Authority Tribunal ("CAT") sided with the CMA in its judicial review, stating that the test was correctly applied and that *"the CMA acted rationally in order to put itself in a position properly to apply the substantial lessening of competition test in a case of dynamic competition."*[874] The CAT agreed with Meta on a single issue of procedure, noting that certain third party confidential material was erroneously not disclosed to the Parties.[875] In its reconsideration following appeal, the CMA again concluded that "*the only way to avoid the significant impact the deal would have on competition is for Giphy to be sold off in its entirety to an approved buyer*."[876]

The CMA decision requiring to unwind the transaction is a milestone, in terms of both employing structural remedies against a leading technology company and labelling Meta's strategic position within the UK.[877] The Commission and a large number of national competition authorities around the world have been publicly criticised for allowing big technology companies to acquire their rather smaller competitors in the

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[871] *Id,* at para. 31.
[872] *Id,* at para. 43.
[873] CMA, *Merger Assessment Guidelines,* CMA129, March 2021, at para. 5.2
[874] Meta Platforms, Inc. v CMA, 1429/4/12/21, https://www.catribunal.org.uk/cases/142941221-meta-platforms-inc at para. 14.
[875] CMA, *Completed acquisition by Facebook, Inc (now Meta Platforms, Inc) of Giphy, Inc. Final report on the case remitted to the CMA by the Competition Appeal Tribunal*, 7, (2022) https://assets.publishing.service.gov.uk/media/635017428fa8f53463dcb9f2/Final_Report_-_Meta.pdf
[876] Competition & Markets Authority, Press Release (October 18, 2022), available at https://www.gov.uk/government/news/cma-orders-meta-to-sell-giphy
[877] Smith, T. *CMA blocks the Facebook/GIPHY merger: you can't say they didn't warn us* (7 December 2021) The Platform Law Blog, *available at* https://theplatformlaw.blog/2021/12/07/cma-blocks-the-facebook-giphy-merger-you-cant-say-they-didnt-warn-us

past,[878] the most prominent one being Facebook's acquisition of Whatsapp, which was cleared by the Commission back in 2014.[879] In this regard, the Meta/Giphy acquisition was CMA's first chance to apply a more strict merger control review on significant technology companies without the shadow of the EU rules and case law following Brexit.

Conclusion on Case Review

As discussed above, the UK's competition authorities tend to evaluate these cases on the basis of the following: (i) innovation competition between the transaction parties, (ii) the parties' incentives to innovate, and (iii) the number and ability of innovative competitors after the completion of the transaction. The competition authorities also take into account the nature of the relevant market, *i.e.,* whether the market in question is a dynamic one. It may also be inferred from the CAs' deliberations in these precedents that third parties generally raise these concerns in the course of the CAs' consultations with the public during an investigation.

In some instances, the competition authorities evaluated the nature of the relevant market in an optimistic manner. For example, in *Ericsson/Creative*, the tendering process appeared as a motivation for other players in the market to place superior bids, therefore even though there might have been concerns about a lessening of innovation, it was thought that the multi-stage nature of bids could mitigate the negative outcomes of the transaction. The competition authorities also considered the possibility that IP rights could be used as a tool to restrict innovation competition, as in *MasterCard/VocaLink*. Furthermore, the competition authorities have also assessed the parties' endeavors to invest in R&D activities as an indicator of a robust innovative competitor in, for instance, the *Getty Images/Digital Vision and Photonica* case and the *Aviagen Group/Hubbard Holding* case.

Concerning dynamic markets, the possibility of a product's rapid emergence is generally assessed as a competitive restraint on incumbent firms, as exemplified in

[878] Sullivan, M. Facebook should never have been allowed to buy Instagram, Silicon Valley rep says, (January 25, 2019) *available at* https://www.fastcompany.com/90297261/facebook-should-never-have-been-allowed-to-buy-instagram-silicon-valley-rep-says

[879] European Commission, Press Release "Mergers: Commission approves acquisition of WhatsApp by Facebook" (Oct. 3, 2014), available at https://ec.europa.eu/commission/presscorner/detail/en/IP_14_1088

the *Research Machines/Sentinel* and *Cirrus Logic/Wolfson* cases. In other instances, such as *Akzo Nobel/Metlac* and *Thermo Electron/GV*, in markets with high entry barriers, the loss of an innovative competitor led to the elimination of innovation competition, from the competition authorities` perspective – their idea being that a monopoly or duopoly would be unlikely to innovate. In *BT Group/EE Limited*, the CMA also acknowledged that the commitments proffered to a regulatory body could somehow obviate the requirement to provide undertakings in lieu, in cases where an SLC is deemed to be likely to arise. The recent Facebook/Giphy case demonstrates that the CMA is going to be taking a stricter view with regard to transactions in dynamic markets, bolstered by the Revised Merger Guidelines.

With respect to online platforms, the competition authorities have a wide range of precedents to pick from, owing to the "share supply test" of Section 23(3) of the EA. As in *Google/BeatThatQuote*, *Priceline /Kayak,* and *Just Eat/Hungryhouse*, the competition authorities also tend to take into account the two-sided nature of online marketplaces in their analysis. Furthermore, they seek alternative online platforms in their assessments of mergers between close innovative competitors, as seen in *Facebook/Instagram*, *Priceline/Kayak, Motorola/Waze*, and *Just Eat/Hungryhouse*.

As discussed above, *Just Eat/Hungryhouse* also demonstrates that it is possible for agencies to adopt a more balanced approach when it comes to assessing innovation, notwithstanding the burden required. It is also apparent from a review of the cases that, where there are other defenses available to the parties against the authorities` theory of harm regarding the transaction, the parties have not raised defenses based on innovation efficiencies. Whether this stems from the fact that there were no suitable innovation efficiencies to be raised, or if the transaction parties meant they focused more on non-innovation related arguments as a cost-effective defense strategy in the limited time granted, is not clear. A more flexible approach to innovation defenses may thus allow more open and balanced debates on innovation concerns.

V. What Does Brexit Entail for Innovation Considerations in the UK?

The future of innovation considerations in the UK merger control regime is not entirely clear. Even though the CMA has recognized innovation as a factor in its

analysis of SLC, one can argue that the substantial analysis undertaken by the CMA with regards to innovation will continue as before, and increase in number, parallel to the cases following Brexit. In fact, transactions that were previously out of the scope of the jurisdiction of the UK competition authorities, which typically comprise the most significant mergers and acquisitions (such as the well-known recent innovation cases of *Dow/DuPont* and *Bayer/Monsanto*—both of which were reviewed by the Commission), will now find themselves under the microscope of the CMA.[880] It is yet early to say whether the CMA will still follow the Commission`s lead or have a different approach, although there are some indications that not all results will be identical: In 2021, out of the 12 parallel review cases, 2 had different outcomes[881] and the expectation is that this divergence will be a rare occurrence considering that authorities employ similar economic concerns and theories of harm.

Having said that, the UK`s approach to the Illumina/Grail merger was particularly interesting in terms of procedural boundaries. As discussed above in Chapter 3, the Commission had prohibited the implemented acquisition of Grail by Illumina following an in-depth investigation that was initiated upon a complaint dated December 7, 2020. According to the General Court's judgement, the complainant who contacted the Commission had also been in contact with the CMA.[882] As such, it is understood that the CMA, too, carried out a preliminary examination regarding the concentration at issue in November and December of 2020.[883] The CMA's decision concluding its preliminary examination with regards to Illumina/Grail concentration and not proceeding further is not publicly available, however it is speculated that the CMA did not conduct an in-depth investigation since the transaction did not exceed the merger control thresholds in the UK (and there was no nexus with the UK).[884]

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[880] Grenfell, M., A View From The CMA: Brexit And Beyond. Speech At The Advanced EU Competition Law Conference (May 16, 2018), *available* at https://www.gov.uk/government/speeches/a-view-from-the-cma-brexit-and-beyond

[881] Linklaters Insights *Divergence ratios after Brexit. Parallel EU/UK merger reviews one year on* (February 10, 2022) *available at* https://www.linklaters.com/de-de/insights/publications/platypus/platypus-uk-merger-control-analysis/twelfth-platypus-post---divergence-ratios-after-brexit-parallel-eu-uk-merger-reviews-one-year-on

[882] Illumina Inc v Commission. General Court (Third Chamber), Case T-227/21, 13.07.2022, para. 11.

[883] *Id*, paras 186, 213.

[884] Linklaters Insights *When is a jurisdictional GOAT not good enough? UK deal nexus and the CMA's expanded hunt for 'killer acquisitions' and harmful vertical mergers)* (June 1, 2022) *available at* https://www.linklaters.com/en/insights/publications/platypus/platypus-uk-merger-control-analysis/fourteenth-platypus-post---when-is-a-jurisdictional-goat-not-good-enough

While the Commission acted in light of its policy change on Article 22 of the EUMR, which regulates the Commission's ability to review sub-threshold transactions at the request of one or more Member State competition authorities, UK's current legislation in force does not provide a mechanism for transactions which do not meet the designated thresholds.[885] As noted above, the merger control regime in the UK has two threshold options (turnover and share of supply) for a notification obligation. Certain scholars deem the share of supply test in the UK merger control regime to be flexible, since the CMA is able to claim jurisdiction over a transaction if the activities of the parties overlap in the supply of goods or services of any description[886] where they have a combined share of at least 25% in the UK.[887] CMA`s approach to Illumina/Grail shows that "the share of supply test does have outer boundaries, elastic though they are" at this time.[888]

VI. Conclusion

As discussed above, the consideration of innovation-related issues in the UK show much variation, depending on a multitude of factors, such as (i) the market (*i.e.,* sector) characteristics, (ii) the incentives of the transaction parties to innovate, (iii) the number of innovative competitors in the market, and (iv) the general characteristics of the products or services in question. Although the competition authorities in the UK generally appear to have handled theories of harm systematically under both "horizontal and vertical issues"—and in some instances assessed either or both—there were also cases in which the CMA chose not to implement this reasoning. However, it is crucial to note that the most important issues in the view of the UK competition authorities were (i) the parties' motivation to innovate, and (ii) the effect of the transaction on the number and capabilities of innovative competitors after the transaction.

The UK competition policy seeks to foster innovation for the benefit of consumers, and deems that the rivalry among undertakings inspires them to improve their own

[885] The National Security and Investment Act 2021 only lowered the thresholds for certain specific sectors. It came into force on 4 January 2022, applying retrospectively to all transactions completed after 12 November 2020.
[886] Enterprise Act 2002 Section 23(3)
[887] Bristows. *They are out to get you. The EU and UK extend the scope of merger control to catch more pharma and biotech mergers* (March 08, 2022) *available at* https://www.bristows.com/news/they-are-out-to-get-you/
[888] *Supra note* 881.

products as well as innovate new ones, which puts them closer to the Arrowian view.[889] Innovation is indeed becoming one of the foremost factors and non-price consequences taken into consideration by the CMA. Considering the challenges posed by emerging and fast developing digital markets for post-merger counterfactuals, CMA has underlined that the traditional assessment methodologies emphasizing price impacts may not be sufficient to adequately establish other indices of competition, such as quality and innovation.[890] Having said that, while the CMA generally starts with the premise that increased concentration in the market could reduce innovation, it would still be expected to allow mergers where merger-specific innovation-related efficiencies are likely to outweigh the anti-competitive impact of a transaction. The burden of proof to establish that a merger is anticompetitive remains with the CMA however when efficiencies are used as a defense in merger analysis, this burden is reversed, and lies with merging parties.[891] This is because the firms are deemed better positioned to demonstrate the facts relevant to an efficiency claim[892] or to assess synergies and cost reductions resulting from a transaction.[893] Also, competition authorities do not wish to take on this burden unnecessarily due to the challenge of identifying and quantify efficiencies prospectively[894] which may unfortunately deprive the firms of defenses based on rival or market-wide innovation incentives which the competition authority`s access and analysis may have revealed. As a result, innovation effects are still seen more as a sword rather than a shield by the authorities, maintaining the asymmetric characteristic of the innovation paradox.

One may deduce from their decisions that the UK competition authorities tend to focus more on innovation assessments in particular sectors, such as electronics. It is difficult to determine accurately whether the UK competition authorities have adopted this approach intentionally, or subconsciously due to the unique characteristics of the

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[889] CMA, *Merger Assessment Guidelines*, CMA129, 18 March 2021.
[890] Andrea Coscelli, Interim Chief Executive Officer, Competition and Markets Authority, *Digital Competition Expert Panel recommendations – CMA view*, available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/788480/CMA_letter_to_BEIS_-_DCEP_report_and_recommendations__Redacted.pdf
[891] CMA, *Appendix F: The SMS regime: a distinct merger control regime for firms with SMS*, (2020).
[892] OECD, Competition Policy and Efficiency Claims in Horizontal Agreements, (1995) p. 41,52, available at: *https://www.oecd.org/daf/competition/2379526.pdf* .
[893] CMA, *Appendix F: The SMS regime: a distinct merger control regime for firms with SMS*, (2020).
[894] OECD, Competition Policy and Efficiency Claims in Horizontal Agreements, (1995), p5

markets and products themselves. One could potentially argue that it would not be possible for these competition authorities to review, for instance, the electronics and clothing sectors equally, in terms of the significance of innovation to these industries. Moreover, there are still several cases and precedents in many sectors, which indicate that the UK competition authorities did not attribute innovation considerations solely to a couple of sector categories. One can easily argue that this discrepancy was a deliberate choice, as the UK competition authorities did not view innovation considerations as equally crucial for each separate sector category. This is evidenced in one of the earliest decisions, *Bayard Capital / Landis & GYR* (2004), where the OFT deemed innovation as a significant dimension of competition in the electronics sector. As more and more transactions in dynamic markets grab the enforcement agencies` attention, and the flexibility provided under the revised guidelines, these cases will increase in number. On that note, the effect of Brexit on the UK's merger control regime also bears close watching: To what extent the CMA will apply the mechanisms and theories developed by the Commission in evaluating innovation, will it diverge or venture to test out new waters regarding innovation assessments in merger control? So far, there have been very few clues to conclusively answer this fundamental question.

Chapter 5
Innovation Considerations in Merger Control in the USA

I. Introduction

Innovation embodies a continuous process that is based on cumulative knowledge arising from the interaction of divergent views. In other words, innovation can be appropriately considered as a product of the society's collective brain[895] and is one of the most critical drivers of economic growth around the world.[896] As the economic studies of Nobel laureate Robert Solow have demonstrated, 90% of the per-capita output increase between 1909 and 1949 was generated through technological improvements and innovations.[897]

Competition enforcement authorities in the US have well recognized the value of innovation.[898] The United States Department of Justice ("DOJ") officials have made numerous statements emphasizing the importance of innovation, declaring that "*the more important that innovation becomes to society, the more important it is to preserve economic incentives to innovate*,"[899] and "*as important as price competition is to us, a second major and possibly even greater concern is maintaining competition for innovation.*"[900]

Having said that, no unified consensus can be observed on how to achieve more significant innovation in the market. As discussed earlier in Chapter 2, the conflicting

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[895] Muthukrishina M. & Henrich J., "Innovation in the Collective Brain." *Philosophical Transactions B Royal Society Publishing* (2016) *available at* https://doi.org/10.1098/rstb.2015.0192 at 371.
[896] Maradana, R.P., Pradhan, R.P., Dash, S., Gaurav, K., Jayakumar M. & Chatterjee, D., "Does innovation promote economic growth? Evidence from European countries" *Journal of Innovation and Entrepreneurship* 6 (2017): Art.1. Katz, M. L. & Shelanski, H. A., *Merger Policy and Innovation: Must Enforcement Change to Account for Technological Change?* In Jaffe A. B., Lerner J, Stern S. (Ed.s) Innovation Policy and the Economy 5, 2005 at 110; Gilbert, (2006) *supra* note 126.
[897] Kathuria, V., "A conceptual framework to identify dynamic efficiency." *European Competition Journal* 11 2-3 (2015): 319-339, at 323.
[898] Katz M.L. & Shelanski, H. A., "Merger Policy and Innovation: Must Enforcement Change to Account for Technological Change?" *Innovation Policy and the Economy* 5 (2005): 109-165.
[899] US Department of Justice, (1999) "Annual Report, Antitrust Division" at 5, as recalled by Katz M. L. & Shelanski, H. A., "Merger Policy and Innovation: Must Enforcement Change to Account for Technological Change?" *Innovation Policy and the Economy* 5 (2005).
[900] Kramer R., Chief, Litigation II Section, Antitrust Division, US Department of Justice, Antitrust Considerations in International Defense Mergers, (May 4, 1999), at 3, as recalled by Michael L. Katz and Howard A. Shelanski, *'Merger Policy and Innovation: Must Enforcement Change to Account for Technological Change?'* Innovation Policy and the Economy, 5 (2005).

views of Joseph Schumpeter and Kenneth Arrow have sparked the debate, with various theoretical and empirical studies trying to reconcile or disprove them. Regardless of their views or preference with respect to one of these approaches (*i.e.,* Schumpeterian or Arrowian), competition enforcers will always seek to protect and further promote innovation. It is worth noting that the Antitrust Division of the DOJ conducted an average of 107 merger investigations each year from 2000 to 2009, and approximately seventy merger investigations per year for the period between 2010 and 2019.[901]

Traditional merger policy in the United States mainly relied on conducting static analyses that focused primarily on the impact of the transaction on prices and generally disregarded dynamic considerations such as research and development.[902] Today, however, innovation as "*a force that could make static measures of market structure unreliable or irrelevant*"[903] plays a significant role in merger control assessments.[904] Indeed, one of the main issues addressed explicitly by the (new) Horizontal Merger Guidelines of 2010, which was issued by the Federal Trade Commission Bureau of Competition ("FTC") and the DOJ's Antitrust Division, was 'restraints on innovation' along with the other substantive merger concerns of exclusion, unilateral effects, and coordinated effects.[905] Furthermore, the Guidelines also specifically regulate any mergers that may have the effect of limiting innovation and reducing product variety.[906]

Against this background, this chapter will seek to review the innovation considerations in merger assessments, as adopted by the competition authorities in the United States, in conjunction with the relevant theories of harm.

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[901] DOJ., Antitrust Division Workload Statistics, 2000-2009, *available at* https://www.justice.gov/sites/default/files/atr/legacy/2012/04/04/281484.pdf; Antitrust Division Workload Statistics, 2010-2019 *available at* https://www.justice.gov/atr/file/788426/download.
[902] Katz M. L. & Shelanski, H. A., "Merger Policy and Innovation: Must Enforcement Change to Account for Technological Change?" *Innovation Policy and the Economy* 5 (2005).
[903] *Id*. at 111.
[904] *Id*. at 110.
[905] Hovenkamp, H., "Harm to Competition Under the 2010 Horizontal Merger Guidelines." *Review of Industrial Organization* 39 1/2 (Aug. 2011): 3-18, *available at* https://www.jstor.org/stable/23885233 at 3.
[906] *Id*.

II. An Overview of the Framework for Evaluating Innovation Considerations in Merger Control in the United States

Prior to the Horizontal Merger Guidelines of 2010, innovation considerations in merger control enforcements were addressed in the: (i) 1968 Merger Guidelines, (ii) 1982 Merger guidelines (ii) 1984 Merger Guidelines (Section 4 on vertical integration remained in effect), (iii) Horizontal Merger Guidelines of 1992 (which was also revised in 1997), and (iv) 1995 Antitrust Guidelines for the Licensing of Intellectual Property (which was renewed in 2017). However, it was the long-awaited Horizontal Merger Guidelines of 2010 that addressed potential restraints on innovation as one of the substantive anti-competitive unilateral effects that must be assessed by competition enforcement authorities.[907]

The 1968 Merger Guidelines had opted for an approach based on "*pure structuralism*,"[908] noting that those markets that are subject to rapid technological changes might not be defined in line with the traditional market definition criteria. However, the 1968 Merger Guidelines did not include any further explanations on this front. Other than this, the 1968 Merger Guidelines only referred to the concept of innovation within the framework of conglomerate merger assessment, as follows:

> "(….) for example, the Department has used Section 7 to prevent mergers which may diminish long-run possibilities of enhanced competition resulting from technological developments that may increase inter-product competition between industries whose products are presently relatively imperfect substitutes."[909]

Following the 1968 Merger Guidelines, the 1984 Merger Guidelines also touched upon the concept of innovation merely in an indirect manner, *i.e.*, via an example concerning the changing market conditions: "*if a new technology that is important to long-term competitive viability is not available to a particular firm, the Department*

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[907] Department of Justice and Federal Trade Commission, Horizontal Merger Guidelines (2010), *available at* https://www.ftc.gov/sites/default/files/attachments/merger-review/100819hmg.pdf § 6.4.
[908] Hovenkamp (2011), *supra note* 905, at 7.
[909] US Department of Justice, Merger Guidelines (1968), *available at* https://www.justice.gov/sites/default/files/atr/legacy/2007/07/11/11247.pdf para 20.

may conclude that the historical market share of the firm overstates the firm's future competitive significance."[910]

Taking a similar approach, the Horizontal Merger Guidelines of 1992 (which were revised in 1997) also make a single reference to the concept of innovation in a footnote, by stating that "*Sellers with market power also may lessen competition on dimensions other than prices, such as product quality, service, or innovation.*"[911] Unfortunately, the issue merits no further discussion within the framework of the Horizontal Merger Guidelines of 1992, in line with the trivializing approach of the 1968 and 1984 Merger Guidelines for innovation considerations.

However, the 1995 Antitrust Guidelines for the Licensing of Intellectual Property ("1995 Licensing Guidelines") might be deemed to constitute a turning point on this front due to its policy improvements, most prominently by its creation of the concept of the "innovation market."[912] The 1995 Licensing Guidelines discuss this new concept in comparison with two long-standing views/characterisations of markets that were, indeed, more commonly used within the competition literature: (i) the goods market, and (ii) the technology market, whereas the 1995 Licensing Guidelines defined an "innovation market" as "a market for research and development on goods or processes not yet in existence."[913] However, the innovation markets' concept has been abandoned by antitrust practitioners in favor of returning the focus to product-markets because it has shifted the attention of competition authorities to the actual competition in innovation markets, instead of the potential competition in product-markets.[914]

The 1995 Licensing Guidelines also made significant references to the licensing practices in innovation-intensive markets and even stated that, in situations where

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[910] US Department of Justice, Merger Guidelines (1984), *available at* https://www.justice.gov/sites/default/files/atr/legacy/2007/07/11/11249.pdf ; *see also* Hovenkamp (2011) s*upra note* 9052 at 7.
[911] US Department of Justice and Federal Trade Commission, Horizontal Merger Guidelines 1992 (revised 1997), *available at* https://www.ftc.gov/sites/default/files/attachments/merger-review/hmg.pdf ; *See also* Hovenkamp (2011) s*upra note* 9052 at 7.
[912] Hayslett III, T. L., "1995 Antitrust Guidelines for the Licensing of Intellectual Property: Harmonizing the Commercial Use of Legal Monopolies With the Prohibitions of Antitrust Law." *Journal of Intellectual Property Law* 3 2 (1996): 375-405.
[913] *Id*.
[914] Katz, M. L. & Shelanski, H. A., "Mergers and Innovation," Antitrust Law Journal 74 1 (2007):1-85 at 38,44 who, argued that the exercise of market definition is not able to capture all "*the innovation-related effects of a merger.*"

the nature of a license or joint venture is related to innovation considerations, the transaction should instead be assessed as a merger.[915] The 1995 Licensing Guidelines' approach to the concept of innovation in merger control was also observed in the 2017 Antitrust Guidelines for the Licensing of Intellectual Property.

Following the 1995 Licensing Guidelines, the Horizontal Merger Guidelines of 2010 addressed restraints on innovation as the main concern of competition authorities in the category of "unilateral effects."[916] The Guidelines contained a separate section (at §6.4) on mergers that limit "innovation and product variety," which was concerned with 'unilateral effects arising from diminished innovation or reduced product variety':

> "[T]he Agencies may consider whether a merger is likely to diminish innovation competition by encouraging the merged firm to curtail its innovative efforts below the level that would prevail in the absence of the merger. That curtailment of innovation could take the form of reduced incentive to continue with an existing product-development effort or reduced incentive to initiate development of new products."[917]

The overall historical legislative background of innovation considerations in US merger control has arrived at a point where the "*emphasis is on diversion of supply through innovation*," which, as Hovenkamp has stated, is a persuasive and cogent antitrust concern that has also been familiar to antitrust law from the very beginning of the 20th century.[918] Recently the DOJ and FTC have been working on revising the merger guidelines in order to modernize them to reflect the market realities, such as the effects of the digital transformation, the evolution of relationships and supply paths towards interconnected ecosystems and conglomerates, the rising significance of factors other than market definition, and to respond to the criticisms on their 2020 vertical merger guidelines.[919] Innovation, intellectual property and digital markets are a few of the many areas that the DOJ and FTC have requested public comment for

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[915] *See* Hovenkamp (2011) s*upra note* 9052.
[916] *Id*.
[917] Department of Justice and Federal Trade Commission, Horizontal Merger Guidelines (2010), *available at* https://www.ftc.gov/sites/default/files/attachments/merger-review/100819hmg.pdf § 6.4.
[918] Hovenkamp (2011), *Supra note* 9052, at 6.
[919] Kanter, J, Remarks to the New York State Bar Association Antitrust Section (Jan 24, 2022) *at* https://www.justice.gov/opa/speech/assistant-attorney-general-jonathan-kanter-antitrust-division-delivers-remarks-new-york

their review.[920] It remains to be seen to what extent if any, of these issues will be addressed in the draft regulations.

III. Innovation Considerations in Horizontal Mergers

The merger of two competitors generally has two main effects on the market: (i) a decrease in the number of competitors, and (ii) an increase in the level of market concentration. This increase in the level of market concentration may hamper competition in the relevant market, and thereby reduce the firms' incentives to innovate.[921]

The initial approach to merger control in the US consisted of making an assessment based on the market share of the merged undertaking, in order to determine whether the proposed merger would hinder the competition. This approach was endorsed and emphasized in the *Brown Shoe* case, where the Supreme Court stated that "*the market share which companies may control by merging is one of the most important factors to be considered when determining the probable effects of the combination on effective competition in the relevant market.*"[922] In 1967, this approach was once again affirmed by the Supreme Court, which stated that "*possible efficiencies cannot be used as a defense to illegality.*"[923]

Until 1974, the Supreme Court persisted in its formalistic view and considered "market share" as the primary indicator to be used for assessing whether a proposed merger would be likely to hinder competition in the market.[924] However, in its *U.S. v. General Dynamics Corporation* decision, the Supreme Court allowed the merger of two coal-mining corporations, by taking into account the non-market share concerns for the first time, stating that the proposed merger would not impede competition in the market since coal was not a resource to be recreated.[925]

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[920] Tenant F. *Crackdown: FTC and DOJ aim to rewrite merger guidelines* Financier Worldwide Magazine (April 2022) *at* https://www.financierworldwide.com/crackdown-ftc-and-doj-aim-to-rewrite-merger-guidelines#.Y2-OLnbP02w

[921] Van Den Bergh, R., *Comparative Competition Law and Economics,* Elgar Edward Publishing Ltd., 2017 at 458.

[922] Brown Shoe Co, Inc. v. United States, 370 US 294, 343 (1962).

[923] Fed. Trade Comm. v. Procter & Gamble Co., 386 US 568, 580 (1967).

[924] United States v. General Dynamics Corp., 415 US 486 (1974).

[925] Paz, M., "Almost But Not Quite Perfect: The Past, Present and Potential Future of Horizontal Merger Enforcement." *Loyola of Los Angeles Law Review* 45 (2012), at 9.

Today, innovation, as a non-market share concern, plays a vital role in merger control assessments in the US. As the above legislative history illustrates, innovation is now even evaluated under a separate section in the 2010 Horizontal Merger Guidelines, which reveals that the competition authorities consider the possibility that the merged undertaking might reduce innovation efforts.[926] According to the 2010 Horizontal Merger Guidelines, (i) the incentive to continue with an existing product-development effort, or (ii) the incentive to initiate the development of new products, might decrease as a result of a proposed merger.[927] The first decline in incentives might occur in the short run, in case a new product developed by one firm captures the revenues generated by the existing product(s) of the other transaction firm.[928] On the other hand, the second type of reduction in innovation incentives might occur, in the long run, if one firm is likely to be able to develop new products that would capture the other firm's substantial revenues.[929] The 2010 Horizontal Merger Guidelines further suggest that "*combining two of a very small number of firms with the strongest capabilities to successfully innovate in a specific direction*" may also harm innovation competition, and thus should not be disregarded by the Agencies (the FTC and the DOJ).[930] The approach adopted by the 2010 Horizontal Merger Guidelines is expansive, and not necessarily contrary to Schumpeter's view, as it allows detecting the risk of a decrease in the incentives to innovate resulting from a merger that does not create a monopoly in the market for research and development.[931]

Antitrust agencies in the US mainly evaluate and challenge horizontal mergers in terms of the "harm to innovation" under two particular theories of harm associated with the emergence of unilateral effects.[932] Accordingly, a merger may be challenged

[926] Department of Justice and Federal Trade Commission, Horizontal Merger Guidelines (2010), *available at* https://www.ftc.gov/sites/default/files/attachments/merger-review/100819hmg.pdf at 23.
[927] *Id*.
[928] *Id*.
[929] *Id*.
[930] *Id*.
[931] Drexl, J., "Anti-Competitive Stumbling Stones on the Way to a Cleaner World: Protecting Competition in Innovation without a Market" *Journal of Competition Law and Economics* 8 3 (2012): 507-542, at 520 as cited in Dardano, V. *Assessing Innovation In Merger Control*, College of Europe (2016) at 14.
[932] Department of Justice and Federal Trade Commission, Horizontal Merger Guidelines (2010), *available at* https://www.ftc.gov/sites/default/files/attachments/merger-review/100819hmg.pdf.

due to (i) reduced actual competition in research and development, and (ii) harm to future competition.[933]

The 2010 Horizontal Merger Guidelines do not put forth a specific test for potential competition.[934] Instead, they provide what might be described as "narrow guidance" to firms on the potential approaches taken by the Agencies on this front.[935] It is actually the courts that have clarified through their jurisprudence how a merger could be challenged in terms of the harm to potential competition: (i) "*the potential competitor must have an "available feasible means" for entering the market;* and (ii) *those means must "offer a substantial likelihood of ultimately producing de-concentration …. or other significant procompetitive effects."*"[936]

In this context, the *Steris/Synergy* case[937] is a relatively recent example illustrating the treatment of innovation considerations associated with the harm to potential competition. In *Steris/Synergy*, the FTC challenged the merger between Steris Corporation ("Steris") and Synergy Health plc ("Synergy"). The FTC argued that Synergy (*i.e.,* the target firm in the transaction) was ready to enter the US market with its x-ray radiation sterilization (a new sterilization technology), and that Steris had abandoned that entry after the merger.[938] According to the FTC, the merger had anticompetitive effects arising from the *"elimination of the likely future competition from Synergy's deployment of x-ray sterilization in the United States."*[939] However, the Court did not accept the FTC's allegations, as it concluded that the evidence submitted by the FTC was insufficient to prove its allegations. The *Steris/Synergy* case is quite significant, as it demonstrates the FTC's sensitivity and responsiveness

[933] Kern, B. R. (2014) *Supra* note 114.
[934] Dardano, V. *Assessing Innovation In Merger Control*, College of Europe (2016), at 14.
[935] Royall M. S. & Di Vincenzo, A. J., "Evaluating Mergers Between Potential Competitors Under the New Horizontal Merger Guidelines." *Antitrust* 25 1 (2010): 33-38 *available at* https://www.gibsondunn.com/wp-content/uploads/documents/publications/RoyallDiVicenzo-HorizontalMergerGuidelines.pdf at 33.
[936] *Id*. at 33-38. Quoting the Supreme Court decision in *United States v. Marine Bancorporation*, as cited in Dardano, V., (2016) *Assessing Innovation In Merger Control*, College of Europe, at 15.
[937] FTC v. Steris/Synergy Health, FTC File no. 151 0032 Dkt no. 9365 (2015), *at* https://www.ftc.gov/enforcement/cases-proceedings/151-0032/sterissynergy-health-matter .
[938] Olhausen, M. K., Antitrust Tales In The Tech Sector: Goldilocks and The Three Mergers And Into Muir Woods, Speech At The Antitrust In The Technology Sector: Policy Perspectives And Insights From The Enforcers, Palo Alto, CA (Jan. 26, 2016) *available at* https://www.ftc.gov/public-statements/2016/01/antitrust-tales-tech-sector-goldilocks-three-mergers-muir-woods .
[939] FTC v. Steris/Synergy Health, FTC File no. 151 0032 Dkt no. 9365 (2015), *at* https://www.ftc.gov/enforcement/cases-proceedings/151-0032/sterissynergy-health-matter , at para 68.

on the issue of the innovation competition, and shows how difficult it is to prove the harm to potential competition before the US courts.

The competition authorities may also challenge mergers relating to markets that do not yet exist (namely, R&D or innovation markets) in the US.[940] In such mergers, however, the potential competition doctrine does not apply.[941] Gilbert and Sunshine have introduced a useful methodology and developed the following steps in assessing this type of harm:[942]

1) Identify overlapping R&D activities of the merging firms;
2) Identify alternative sources of R&D;
3) Evaluate actual and potential downstream competitors of the merging parties;
4) Assess how the increased concentration in R&D would affect investments in R&D; and
5) Evaluate how the merger would affect the efficiency of R&D."[943]

In practice, competition authorities first identify the research and development efforts of the merging parties, and then define a market for the research, development, manufacture, and sale of a particular product, which is, in most such cases, a pharmaceutical product.[944] However, there have been several cases in which the agencies challenged mergers by way of applying the "innovation markets" theory, without being able to identify the innovation efforts in the relevant geographic market explicitly.[945]

Agencies, while assessing the level of concentration in the market, do not focus solely on whether there are other undertakings active in the market other than the merging parties, but also consider their respective strengths in order to find out

[940] Dardano, V., (2016) *Assessing Innovation In Merger Control*, College of Europe., at 16.
[941] Kern, B. R., (2014) *Supra* note 114. Part II, as cited in Dardano, V. (2016) *Assessing Innovation In Merger Control*, College of Europe, at 14.
[942] Dardano, V., (2016) *Assessing Innovation In Merger Control*, College of Europe.
[943] Gilbert R.J. & Sunshine S.C. "Incorporating Dynamic Efficiency Concerns in Merger Analysis: The Use of Innovation Markets" *Antitrust Law Journal* Vol 63 No.2 (Winter 1995) pp 569-601, at 595-597.
[944] *See Pfizer/Warner Lambert*, Federal Trade Commission. Complaint of 19 June 2000, Dkt C-3957, *available at* https://www.ftc.gov/sites/default/files/documents/cases/2000/07/pfizercmp.htm as cited in Dardano, V. (2016) *Assessing Innovation In Merger Control*, College of Europe, at 16.
[945] *See ZF/Allison* merger, as recalled by Kern, B. R., (2014) *Supra* note 114 at 12.

whether the merging parties are the ones that are most capable of undertaking R&D efforts.[946] In the *Roche/Genentech* case, even though Roche was dealing with the pre-clinical studies and Genentech was in Phase I review for a particular drug, the FTC nevertheless imposed remedies on Roche with regard to the product that was still in the development phase. However, the drug was not ultimately brought into the market.[947] This decision was criticized by commentators, including Carrier, who argued that there is no firm evidence of market concentration if the products in question are not at an advanced level of development, and therefore, the FTC should not challenge or block the merger in such cases.[948]

Furthermore, particular innovation-related concerns might arise if a non-existent market is involved.[949] In the *Nielsen/Arbitron* case, the FTC's concern stemmed from the idea that the merger would lead to unilateral effects through the elimination of future competition in a market which did not yet exist.[950] Accordingly, the FTC cleared the merger on the condition that the assets of the acquirer would be divested.[951] Although Nielsen and Arbitron were the most capable firms for the research and development of a cross-platform audience measurement service, such a product had not yet been developed or introduced into the relevant product-market.[952] On the other hand, Commissioner J.D. Wright, in his dissenting opinion about the decision, stated that the FTC had challenged the merger under a novel theory, alleging that the competition would be significantly harmed in a non-existent market.[953] According to Commissioner J.D. Wright's view, predictive merger analysis should be avoided if the evidence at hand is limited or ambiguous, as there exists a

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[946] *See* The FTC, *Roche Holdings Ltd.,* (113 F.T.C. 1086) (1990), as cited in Dardano, V. (2016) *Assessing Innovation In Merger Control*, College of Europe, at 17.
[947] Carrier, M. A., "*Innovation for the 21st Century: Harnessing the Power of Intellectual Property and Antitrust Law*. Oxford University Press (2009): 314 "Firms in preclinical development should not be considered part of the relevant market and the most imminent harm is presented by merging firms in Phase III."
[948] *Id*. at 322.
[949] Nielsen Holding/Arbitron, FTC Matter no. 131 0058, *at* https://www.ftc.gov/enforcement/cases-proceedings/131-0058/nielsen-holdings-nv-arbitron-inc-matter , as cited in Dardano, V. (2016) *Assessing Innovation In Merger Control*, College of Europe, at 17.
[950] *Id.* at §12(b).
[951] FTC Press Release, FTC Approves Final Order Settling Charges that Nielsen Holdings N.V.'s Acquisition of Arbitron, Inc. Was Anticompetitive (Feb. 28, 2014), *available at* https://www.ftc.gov/news-events/press-releases/2014/02/ftc-approves-final-order-settling-charges-nielsen-holdings-nvs .
[952] McSweeny, T., "Competition Law: Keeping Pace in a Digital Age, Keynote Remarks at the 16th Annual Loyola Antitrust Colloquium, Chicago *Chronicle* (2016) *available at* https://www.ftc.gov/public-statements/2016/04/competition-law-keeping-pace-digital-age at 5 .
[953] Wright, J. in *Nielsen Holding/Arbitron*, FTC Matter no. 131 0058 *available at* https://www.ftc.gov/enforcement/cases-proceedings/131-0058/nielsen-holdings-nv-arbitron-inc-matter at 1.

risk that the results of the case might be affected by non-economic assessments, intuitions and policy preferences.[954]

Several other important cases provide valuable insights concerning innovation considerations in the US merger control regime. For instance, the DOJ, in *the United States, et al. v. The Dow Chemical Company and E.I. Du Pont De Nemours and Company*[955] challenged the merger between Dow and DuPont, which were both leading companies in the markets for crop-protection chemicals and treated seeds. Furthermore, both companies were involved in manufacturing certain types of petrochemicals as well, which included the derivatives of high-pressure ethylene, *e.g.,* the essential input for a significant number of other products and sectors. The DOJ alleged in its complaint that the merger (as proposed) would restrict competition in the relevant product-markets for 'broadleaf herbicides for winter wheat' and 'chewing pest insecticides,' and would form a monopoly in the markets for 'acid copolymers and ionomers in the U.S.' The DOJ arrived at this conclusion by hypothesizing that the proposed merger would lead not only to increases in the prices but also to reduced levels of service and innovation, in these relevant product-markets. Having said that, unlike the European Commission, the DoJ's innovation concerns in the case did not expand into "innovation spaces" or early pipeline products and R&D.[956] As a result, the final judgment of the DOJ required: (i) DuPont to 'divest its Finesse-formulated herbicide products and its Rynaxypyr-formulated insecticide products, along with the assets used to develop, manufacture, and sell those products,' and (ii) Dow Chemical to 'divest its Freeport, Texas, acid copolymers and ionomers manufacturing unit and associated assets.'[957]

In the *EagleView Technology/Verisk Decision*,[958] the FTC challenged the proposed $650 million acquisition of EagleView Technology Corp. ("EagleView") by Verisk

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[954] *Id*. at 3-4.
[955] United States et al. v. The Dow Chemical Co. and E. I., Du Pont De Nemours and Co., FTC, No. 1-17-cv-01176 (D.D.C. filed Jun. 15, 2017).
[956] The competitive impact assessments in this case do not specifically refer to pipe-line products or products in innovation spaces. Coupled with press release, we understand that in the end the DoJ did not advance such claims. *See.* DOJ Press Release (June 15, 2017), available at https://www.justice.gov/opa/pr/justice-department-requires-divestiture-certain-herbicides-insecticides-and-plastics .
[957] United States et al. v. The Dow Chemical Co. and E. I., Du Pont De Nemours and Co., FTC, No. 1-17-cv-01176 (D.D.C. filed Jun. 15, 2017).
[958] EagleView Technology/Verisk, FTC Dkt. 9363, (Final order issued on Dec. 16, 2014.

Analytics Inc. ("Verisk"). The FTC claimed that Verisk would "emerge as the only significant firm producing and selling Rooftop Aerial Measurement Products for insurance purposes,"[959] since EagleView was the leading US provider of rooftop aerial measurement products used by insurance carriers. Although the FTC did not specifically define an 'innovation market' regarding the market for 'producing and selling rooftop aerial measurement products for insurance purposes,' the concept of innovation nevertheless played a vital role in terms of determining the potential result of the proposed merger in the EagleView Technology/Verisk case. On that particular matter, the FTC stated that the competition between these two undertakings provided not only lower-priced alternatives for insurance carriers, but also more choices, better service and quality, and increased innovation. The FTC referred to the innovative competition for products and services between EagleView and Verisk with a real-world example, stating that "*Verisk embarked on a program to capture aerial images with higher resolution imagery to win insurance carrier customers away from Eagle View*."[960] In this context, the FTC remarked that "*to the extent, there are merger-specific and verifiable efficiencies, they are insufficient to outweigh the Acquisition's likely harm*" and arrived at the conclusion that the proposed acquisition agreement would constitute a violation of Section 5 of the FTC Act.[961]

In *Medtronic/Covidien*,[962] the FTC challenged the proposed $42.9 billion mergers between the two undertakings, where Covidien's pipeline product, a drug-coated balloon for the treatment of vascular diseases, was expected to compete with the existing similar products of Medtronic.[963] The FTC stated that the proposed merger between Medtronic and Covidien in the market for the development, licensing, manufacturing, marketing, distribution, and sale of drug-coated balloon catheters indicated for the femoropopliteal ("fempop") artery would eliminate competition for Covidien's innovative product.[964] The FTC indicated that the proposed merger would hinder competition in the relevant product-market by (i) eliminating future competition between Medtronic and Covidien in the US market for drug-coated balloon catheters

[959] *Id.* at para 1.
[960] *Id.* at para 40.
[961] *Id.* at para 47.
[962] Medtronic/Covidien, FTC Complaint. Dkt. C-4503 (Jan. 13, 2015), at https://www.ftc.gov/system/files/documents/cases/150121medtroniccovidiencmpt.pdf .
[963] Mosso, (2018) *supra note* 162 at 6.
[964] *Id*. at 7.

indicated for the fem-pop artery; (ii) increasing the likelihood that the combined entity would forego or delay the launch of one company's drug-coated balloon catheter indicated for the fem-pop artery; (iii) increasing the likelihood that the combined entity would delay, eliminate, or otherwise reduce the substantial additional price competition that would have resulted from an additional US supplier of drug-coated balloon catheters indicated for the fem-pop artery; and (iv) reducing research and development in the US market for drug-coated balloon catheters indicated for the fem-pop artery.[965] The merger was eventually cleared by the FTC, subject to the divestiture of Covidien's Drug-Coated Balloon Business.[966]

In the *Broadcom/Brocade Communications Systems* case,[967] the FTC challenged the acquisition of Brocade Communications Systems Inc. ("Brocade") by Broadcom Limited ("Broadcom") for $5.9 billion. The FTC alleged that the proposed acquisition might be anti-competitive in its effects since it might give Broadcom access to the confidential business information of Cisco Systems, which was a significant competitor of Brocade. This type of information could potentially be used to restrict the competition in the relevant product market, and also, to slow down the innovation in *'the market for fiber channel switches'* globally. As per the FTC's complaint, (i) Cisco and Brocade were the only two rival firms in the market for fiber channel switches worldwide, and (ii) within the manufacturing of fiber channel switches, Broadcom supplied *'application-specific integrated circuits'* to both companies. The FTC also alleged that Broadcom, as the new owner of Brocade, might use Cisco's confidential business information to exercise market power by itself or to engage in coordinative behavior between Brocade and Cisco. The FTC surmised that this would ultimately make it more likely for fiber channel switch prices to increase. To propose a remedy for these concerns, the FTC issued a consent order in order to prevent Broadcom from using the competitively sensitive information (*i.e.,* the trade secrets of Cisco), except for *'designing, manufacturing, and selling fiber channel application-specific integrated circuits'* for Cisco. This decision makes a clear reference to the potential harm to the innovative dynamics of the relevant product-

[965] Medtronic/Covidien, FTC Complaint. Dkt. C-4503 (Jan. 13, 2015),.
[966] *Id*.
[967] Broadcom Ltd. and Brocade Communications Systems, Inc., FTC Dkt. C-4622 (Final order issued on Aug. 17, 2017)

market, and further states that the proposed acquisition of Brocade by Broadcom might restrict competition.

In *United States et al. v. Comcast Corp., General Electric Co. and NBC Universal Inc.*, [968] the DOJ filed a complaint against the proposed joint venture between Comcast Corporation ("Comcast"), General Electric Company ("GE"), NBC Universal, Inc. ("NBCU"), and Navy, LLC ("Newco"). The DOJ contended that, as a result of the proposed joint venture, Comcast, which was considered to be the largest US cable company at the time, would have control over the major part of a joint venture that controls a significantly valued video programming product that Comcast's competitors in the distribution of videos needed in order to be able to effectively compete in the relevant market. The DOJ also evaluated that the loss of current and future competition might result in decreases in the quality of the services, with fewer options, increased prices and reduced investments and innovation in the dynamic telecommunications technology sector. On that note, the DOJ explained the potential of online video distributors ("OVDs") by explicitly referring to the dynamic and innovative nature of the market:

> "[R]ecognizing the enormous potential of OVDs, dozens of companies are innovating and experimenting with products and services that either distribute online video programming or facilitate such distribution. New developments, products, and models are announced on almost a daily basis by companies seeking to satisfy consumer demand."[969]

In other words, the DOJ assessed the anti-competitive effects of the proposed transaction by addressing innovation considerations. The DOJ stated that restraints on innovation are "*very likely to produce a far greater amount of economic harm than classical restraints on competition*,"[970] concluding that the proposed joint venture would negatively affect the incentive to innovate.[971]

In *Pfizer/Hospira*, the FTC challenged the merger of Hospira and Pfizer by claiming that the proposed merger was likely to eliminate the actual, direct, substantial, and

[968] United States et al. v. Comcast Corp., General Electric Co. and NBC Universal, Inc., No. 1:11-CV00106. (D.D.C. filed Jan. 18, 2011).
[969] *Id*.
[970] *Id*.
[971] *Id*. at S.3.

also future competition between these two companies.[972] In order to alleviate the FTC's competition-related concerns, Pfizer Inc. agreed to sell the rights and assets related to four pharmaceutical products for settlement.[973] While the European Commission had already assessed the possible adverse effects of the proposed merger on innovation and had obliged Pfizer to sell its pipeline product, the FTC did not explicitly evaluate the possible adverse effects of the merger on innovation.[974] To that end, Comanor and Scherer have argued that the FTC might be underestimating the effects of mergers on innovation in the market in its decisional practice.[975]

In *PowerReviews/Bazaarvoice*, the DOJ challenged the proposed acquisition and argued that the number of companies engaged in *"feature-driven one-upmanship"* and incentive to innovate in the market would be significantly reduced.[976] The DOJ further indicated that, as a result of this acquisition, Bazaarvoice would eliminate its most significant rival and effectively insulate itself from the competition in the market.[977] The Bazaarvoice and PowerReviews competed aggressively on price, resulting in significant savings to customers in the relevant product-market of "product ratings and reviews platforms."[978]

In *AT&T/T-Mobile,* which is one of the most significant cases in terms of the innovation considerations in merger control, the DOJ described the unique nature of telecommunications services before delving into the details of the anti-competitive effects of the proposed merger, and stated that "*[i]nnovation in wireless technology drives innovation throughout our 21st-century information economy, helping to increase productivity, create jobs, and improve our daily lives.*"[979] In this context, the FTC argued that the proposed merger was likely to reduce innovation and product

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[972] Pfizer/Hospira, FTC Complaint DKT. C-4537, (Aug. 21, 2015), *at* https://www.ftc.gov/system/files/documents/cases/150824pfizerhospiracmpt.pdf .
[973] *Id*.
[974] Vestager, M., (2016) Competition: The mother of invention, European Competition and Consumer Day, (Apr. 18, 2016) *available at* https://ec.europa.eu/commission/commissioners/2014-2019/vestager/announcements/competition-mother-invention_en .
[975] Comanor, W. S. & Scherer, F. M., "Mergers and Innovation in the Pharmaceutical Industry" *Journal of Health Economics* 32 (2013): 106-113 at 107.
[976] United States v. Bazaarvoice, Inc., DOJ Complaint, C-12-0133 (Jan. 10, 2013).
[977] *Id*.
[978] United States v Bazaarvoice, Plaintiff United States of America's Post-Trial Proposed Findings of Fact, (Oct. 31, 2013) *at* https://www.justice.gov/atr/case-document/plaintiff-united-states-americas-post-trial-proposed-findings-fact-public-version .
[979] AT&T/T-Mobile US Department of Justice Antitrust Division, Case No: 1: 11-cv-01S60, filed on 31.08.2011, para 1.

variety by eliminating T-Mobile's competition in the relevant market. The FTC even provided an example to demonstrate its view of the potential market under a post-merger scenario, where "*the innovation that an independent T-Mobile brings to the market - as reflected in the array of industry "firsts" it has introduced in the past, such as the first Android phone, Blackberry e-mail, and the Sidekick - would also be lost, depriving consumers of important benefits.*"[980]

In light of the foregoing considerations, the FTC concluded that the proposed acquisition would eliminate the overall innovation competition that an independent T-Mobile brings to the marketplace,[981] after highlighting T-Mobile's recent plans to revitalize the company by returning to its roots as an innovation leader.[982] The FTC also clearly demonstrated its approach towards the incentive to innovate by declaring that "*unless this acquisition is enjoined, customers of mobile wireless telecommunications services likely will face higher prices, less product variety and innovation, and poorer quality services due to reduced incentives to invest than would exist absent the merger.*"[983]

IV. Innovation Considerations in Non-Horizontal Mergers

There is a tendency among competition authorities to assume that non-horizontal mergers are less likely to raise competition law concerns, at least compared to horizontal mergers, as the merging firms do not operate in the same product-market(s). This explains the fact that the Non-Horizontal Merger Guidelines[984] in the US had not been revised for 36 years, whereas the Horizontal Merger Guidelines

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[980] *Id.* at para 38.
[981] *Id. at* para 33; *See also*, at 40: *"As a result, concentration will increase in many local markets and competition likely will be substantially lessened across the nation, resulting in higher prices, diminished investment, and less product variety and innovation than would exist without the merger, both with respect to services provided over today's mobile wireless devices, as well as future innovative devices that have yet to be developed."*
[982] AT&T/T-Mobile US Department of Justice Antitrust Division, Case No: 1: 11-cv-01S60, filed on 31.08.2011, at para 31: *"T-Mobile's future in a Nov./Dec. 2010 document titled "T-Mobile USA Challenger Strategy: The Path Forward": Our heritage and future [are] as a challenger brand. TMUS will attack incumbents and find innovative ways to overcome scale disadvantages."*; at para 36: *"Through this proposed merger, AT&T lessens this threat now, and, if the merger is approved, would eliminate it permanently. Its new aggressive and innovative pricing plans, low-priced smartphones, and superior customer service would have been likely to disrupt current industry models and require competitive responses from the other national players."*
[983] AT&T/T-Mobile US Department of Justice Antitrust Division, Case No: 1: 11-cv-01S60, filed on 31.08.2011, at para 3.
[984] United States Department of Justice, Merger Guidelines (1984), *available at* https://www.justice.gov/sites/default/files/atr/legacy/2007/07/11/11249.pdf

have been updated six times over the last 51 years.[985] Accordingly, the treatment of vertical mergers had not been subject to a revision until June 2020.[986]

Competition enforcement authorities are also more prone to consider efficiency defenses for non-horizontal mergers, such as lower transaction costs, cost synergies, improvement of distribution channels, among others. Non-Horizontal Merger Guidelines do, however, pose two conditions under which non-horizontal mergers carry the risk of causing a decrease in the level of competition in the relevant market: (i) entry barriers, and (ii) facilitated collusion. Innovation-related concerns are also assessed within the scope of these potential anti-competitive outcomes. Indeed, in sectors where significant amounts of innovation are involved (*e.g.,* digital), the merging parties' capability to innovate similar products in an ecosystem could result in certain anti-competitive concerns in terms of creating innovation, even in conglomerate mergers.[987]

More commonly accepted theories of harm for vertical mergers would include higher entry barriers and foreclosure that would lead to reduced competitive pressures in the relevant market, which might result in a decreased innovation competition. The merging undertakings might, for instance, disappear from the stage as a potential entrant or entry facilitator into the other firm's market.[988] Some scholars have further argued that vertical mergers could also lead to raises in the costs of downstream rivals, in case the merged entity (i) refuses to sell or degrades the quality of its products in the upstream market, (ii) raises the input price for the downstream rivals, or (iii) restricts their cost-effective ability to expand.[989] In these instances, vertical mergers might cause higher prices and or less innovation in the relevant market. The innovation theories of harm regarding conglomerate mergers might emerge in numerous ways such as reduced research and development incentives of the

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[985] Langenfeld, J., "The need to revise the US non-horizontal merger guidelines." *Concurrences Review* 4 (2016): 51-58.
[986] Department of Justice and Federal Trade Commission, Vertical Merger Guidelines, June 30, 2020 ("**2020 Guidelines**") *available at* https://www.ftc.gov/system/files/documents/reports/us-department-justice-federal-trade-commission-vertical-merger-guidelines/vertical_merger_guidelines_6-30-20.pdf
[987] Regibeau P. & Lianos I., Digital Mergers: A Primer (Oct. 30, 2020) available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3837281 at 12.
[988] Salop, S., and Culley, D., "Revising the US vertical merger guidelines: policy issues and an interim guide for practitioners." *Journal of Antitrust Enforcement* 4 1 (2015): 1-41.
[989] *Id*.

entrants, especially in cases the merging parties produce complementary products.[990]

For instance, in *Comcast Corporation*, the DOJ used its Competitive Impact Statement to address the concern that the transaction would allow Comcast to disadvantage not only its traditional competitors but also the emerging innovative online video distributors. The DOJ noted that the loss of current and future competition in that market would result in "*reduced investment and less innovation in this dynamic industry*," among others.[991]

Another (less common) theory of harm would be "*facilitated collusion*," according to which the non-horizontal merger would let the merged entity to misuse commercially sensitive information.[992] So it is likely to arise, for instance, in case the merged entity takes advantage of its post-merger privileges to access data in order to counter the innovations of competing undertakings.[993] In addition to pricing information, design specifications are also considered to be among the competitively sensitive information that can be passed on between merging entities in case of vertical integration.[994] Commentators have argued that this would lead to free-riding practices by the merging undertaking over its rivals' work, which might decrease their incentives to innovate.[995]

In this regard, the transactions concerning the acquisition by *Silicon Graphics Inc.* of *Alias Research Inc.* and *Wavefront Technologies, Inc.*, provides a useful and illustrative example.[996] The FTC challenged this transaction, which involved the purchase of two of the world's three leading entertainment graphics software firms (Alias Research Inc. and Wavefront Technologies, Inc.) by Silicon Graphics Inc., which had a 90% share of the market for the workstations that run the software in

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[990] Etro, F. CONGLOMERATE MERGERS AND ENTRY IN INNOVATIVE INDUSTRIES, 2-3 University Ca' Foscari of Venice, Dept. of Econ. Resch., Working Paper Series No. 19/WP/2018 (2018).
[991] DOJ, US & Plaintiff States v. Comcast Corp., et al., Competitive Impact Statement. 11-cv-00106 *available at* https://www.justice.gov/atr/case-document/competitive-impact-statement-72 .
[992] OECD, Background Note: Vertical Mergers in the Technology, Media and Telecom Sector (2019), *available at* https://one.oecd.org/document/DAF/COMP(2019)5/en/pdf .
[993] *Id*.
[994] Varney, C. A., Vertical Merger Enforcement Challenges At The FTC, The 36th Annual Antitrust Institute, San Francisco, California, *available at* https://www.ftc.gov/public-statements/1995/07/vertical-merger-enforcement-challenges-ftc.
[995] *Id*.
[996] Silicon Graphics, Inc., FTC Dkt C-3626, (Nov. 14, 1995).

question. The FTC stated that its "*goal in bringing the case is to preserve competition on the basis of price and innovation for software and hardware involved in producing sophisticated computer-based graphics for the entertainment industry*."[997]

According to the FTC, the potential post-transaction concerns, in this case, included "*foreclosing access by other workstation producers to significant, independent sources of entertainment graphics software*" and "*giving Silicon Graphics proprietary, competitively sensitive information about other workstation producers.*"[998] The FTC further added that, in case other workstation producers were not able to access Alias's and Wavefront's software, this might lead to cost increases for competitors through foreclosing, hinder the access of new entrants; resulting in loss of innovation as well as increased prices.[999] The FTC reached a Consent Agreement with Silicon Graphics, Inc. to settle these charges, which would require Silicon Graphics to "*to take steps to ensure that other companies that develop and sell such software and the workstations to run it can compete with Silicon Graphics*" and also contained various reporting provisions that would assist the FTC in monitoring Silicon Graphics' compliance.[1000]

The Long-Awaited (but short-lived) 2020 Vertical Merger Guidelines

On June 30, 2020, the Agencies (FTC and the DOJ) jointly adopted the 2020 Guidelines in an effort to provide insights on potential anticompetitive harms that arise with vertical mergers, while continuing to recognize that such transactions can be procompetitive or at least competitively neutral.[1001] However, the 2020 Guidelines received various criticisms from different stakeholders.[1002] Despite the DOJ and the

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[997] Silicon Graphics, Inc. FTC Press Release, (Jun. 9, 1995), at https://www.ftc.gov/news-events/press-releases/1995/06/silicon-graphics-inc
[998] *Id*.
[999] *Id*.
[1000] *Id*.
[1001] 2020 Guidelines, Section 1, para 6. The Commentary on Vertical Merger Enforcement ("***Commentary***") set out further explanations to the 2020 Guidelines. *See* Federal Trade Commission Press Release (Dec 22, 2020), "FTC Issues Commentary on Vertical Merger Enforcement" *available at* https://www.ftc.gov/news-events/news/press-releases/2020/12/ftc-issues-commentary-vertical-merger-enforcement
[1002] Thomas, R. C. & DeFilippo A. & Forbes L. M. *"United States: What A Difference A Year Makes: FTC Withdraws Vertical Merger Guidelines*", 2021, Mondaq, *available at* https://www.mondaq.com/unitedstates/antitrust-eu-competition-/1138042/what-a-difference-a-year-makes-ftc-withdraws-vertical-merger-guidelines#:~:text=In%20September%202021%2C%20the%20five,commentary%20on%20vertical%20merger%20enforcement

FTC seeking opinions from legal professionals, economists, enforcers and academia prior to adoption of the 2020 guidelines, it seemed almost no substantial changes were made, especially in relation to innovation.[1003] Consequently, on September 15, 2021, the FTC voted to withdraw its approval of the 2020 Guidelines and also its support from the related Commentary[1004] since it was evaluated that the 2020 Guidelines had unsound economic theories that are unsupported by the law or market realities.[1005] It was also condemned for being too pro-defendant, with a procompetitive bias not supported by economic theory.[1006] On the other hand, the removal was also criticized as being part of the FTC`s Neo-Brandeisian approach towards industry concentrations, namely against the Big Tech.[1007]

The 2020 Guidelines were removed with a majority vote, with two commissioners dissenting.[1008] On the other hand, the DOJ did not remove the 2020 Guidelines and expressed in its statement that the 2020 Guidelines "*remain in place at the DOJ*" as it was still conducting a careful review of the 2020 Guidelines to ensure they are appropriately skeptical of harmful mergers.[1009] The contradictory approach of the Agencies was further criticized for creating uncertainty for the business community.[1010]

Material Changes Brought by the 2020 Guidelines and Critical Assessments

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[1003] Justice Department Issues Statement on the Vertical Merger Guidelines *available at* https://www.justice.gov/opa/pr/justice-department-issues-statement-vertical-merger-guidelines

[1004] FTC, Press Release "Federal Trade Commission Withdraws Vertical Merger Guidelines and Commentary" *available at*: https://www.ftc.gov/news-events/news/press-releases/2021/09/federal-trade-commission-withdraws-vertical-merger-guidelines-commentary

[1005] *Id.*

[1006] Promarket. Salop S.C., *The FTC Was Correct to Withdraw the Vertical Merger Guidelines* (2021), *available at* https://www.promarket.org/2021/11/22/ftc-vertical-merger-guidelines-economics-withdrawn-lina-khan-salop/#:~:text=The%202020%20Vertical%20Merger%20Guidelines,empirical%20studies%20or%20economic%20theory

[1007] Keyte, J. New Merger Guidelines: Are the Agencies on a Collision Course with Case Law? Antitrust Magazine (American Bar Association), Fall 2021 Volume 36, Issue 1 49-54.

[1008] Dissenting Statement of Commissioners Noah Joshua Phillips and Christine S. Wilson (Sept 15, 2021) *available at* https://www.ftc.gov/system/files/documents/public_statements/1596388/p810034phillipswilsonstatementvmgrescission.pdf, The Commissioners dissented from the withdrawal decision of the 2020 Guidelines for the following main reasons; (i) the decision will chill pro-competitive deals and hurt consumers, (ii) the decision discards transparency in favour of uncertainty and (iii) the decision leads to unchecked regulatory power over guidance (iv) the decision lacks any public input, (v) the analysis of the majority voters conflates pro-competitive effects of a merger with merger efficiencies as well as ignoring the burden shifting framework regarding the recognition of pro-competitive effects that may render a competition-eliminating merger pro-competitive overall, and (vi) the analysis of the majority voters lacks the pros and cons of mergers may possibly cause consumer harm.

[1009] FTC, Press Release, September 15, 2021, *available at* https://www.ftc.gov/news-events/news/press-releases/2021/09/federal-trade-commission-withdraws-vertical-merger-guidelines-commentary

[1010] Shapiro C. & Hovenkamp H. "How Will the FTC Evaluate Vertical Mergers?", 2021, *available at* https://promark et.org/2021/09/23/ftc-vertical-mergers-antitrust-shapiro-hovenkamp/

Although now withdrawn, it is worthwhile to briefly review the changes that were brought by the 2020 Guidelines, to demonstrate the evolution of the antitrust enforcement approach and the relevant criticisms. First of all, the 2020 Guidelines as well as the explanatory Commentary recognized that the vertical mergers often benefit consumers,[1011] yet also set forth non-exhaustive ways in which non-horizontal mergers may substantially lessen competition and require the scrutiny of the Agencies.[1012] The primary theories of harm focused on (i) foreclosure and raising rivals' costs, (ii) access to competitively sensitive information, and (iii) facilitating collusion. In addition, the Guidelines explained (i) the harms arising from mergers that potentially increase the cost of entry into a relevant market; (ii) merger and acquisition of complementary products that disadvantage rivals and (iii) "diagonal" mergers that combine undertakings or assets at different stages of supply chains in competition.[1013]

Elimination of pre-merger double marginalization ("***EDM***")[1014] was considered as an important pro-competitive effect of vertical integration. In this regard, the 2020 Guidelines introduced important changes and replaced the prior language which read as follows "*the Agencies generally rely on the parties to (…) demonstrate"* with "*it is incumbent upon the merging firms to provide substantiation for claims*" of EDM.[1015] Accordingly, whereas the word "*demonstrate*" required burden of proof to be rested with the Agencies, the word "*substantiates*" referred to burden of production[1016] rested with the merging parties. To that end, for any effect based analysis, 2020 Guidelines suggested that the merging parties were rested with the burden of production, but the Agencies had the burden of proof.[1017]

Separately, efficiency of the vertical mergers and EDM`s benefit to consumers was highlighted; noting that EDM would indeed ensure "*incentive to set lower*

[1011] 2020 Guidelines, Section 1, para 2,
[1012] *Id*. Section 4, para 6.
[1013] *Id*. Section 6.
[1014] Double marginalization arises when both the upstream and downstream markets exhibit some degree of economic market power, and thus firms at each level mark up their prices above marginal cost.
[1015] Wong-Ervin, K., and Harkrider, J. D., *Assessment of the Vertical Merger Guidelines and Recommendations for the VMGs Commentary* (2020) *available at* SSRN: https://ssrn.com/abstract=3644431 p. 2.
[1016] For completeness, burden of production is a part of the burden of proof; however, it refers to the duty upon a party in a legal proceeding to introduce enough evidence relating to an assertion of a fact to have the issue be considered by the fact-finder rather than summarily dismissed or decided.
[1017] For completeness, in order to ensure the purpose of the Guidelines appropriately, the burden shifting framework should be applied by the U.S. courts in their review of mergers and determining the net effect of a transaction suggests a deviation from the prevailing legal framework in which the department may establish in court a prima facie case based on evidence of harm alone.

downstream prices."[1018] On the other hand, by weighing the pros and cons regarding the efficiency approach, the theory that EDM may possibly "*make the market less vulnerable to coordination*" as it would create "*incentive to cheat on a tacit agreement*" was adopted.[1019]

The 2020 Guidelines further recognized that although horizontal mergers are more likely to be problematic, "*vertical mergers are not invariably innocuous*" and may comprise of possible problematic features such as leading to barriers to market entry and durable market power.[1020]

Following its adoption, a high number of scholars, lawyers, and economists found various flaws with and requested a revisit of the Guidelines.[1021] A non-exhaustive list of key arguments in opposition to the Guidelines included the following:

i. The 2020 Guidelines do not address the full range of competitive harms

Even though the 2020 Guidelines included various theories of harm, these were deemed insufficient by the critics as some of the crucial anticompetitive presumptions were left out.[1022] The commentators noted that the Guidelines failed to evaluate the full range of potential competitive harms including higher prices and reduced quality or innovation associated with vertical mergers; and therefore more permissive.[1023]

Moreover, the 2020 Guidelines attributed minimal importance to innovation harms and quality harms, overlooking their importance to vertical theories of harm.[1024] For example, the 2020 Guidelines did not foresee appropriate scenarios regarding killer acquisitions and creation of kill zones that are commonly and strategically used by

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[1018] 2020 Guidelines, Section.4 "Unilateral Effects".
[1019] 2020 Guidelines, Section 5, "Coordinated Effects".
[1020] Salop, S., "Invigorating Vertical Merger Enforcement", *The Yale Law Journal* Vol. 127, No. 7 (May 2018), p. 1962-1994 *available at* https://www.jstor.org/stable/i40225251
[1021] Thomas, R. C. & DeFilippo A. & Forbes L. M. *"United States: What A Difference A Year Makes: FTC Withdraws Vertical Merger Guidelines*", 2021, Mondaq, *available at* https://www.mondaq.com/unitedstates/antitrust-eu-competition-/1138042/what-a-difference-a-year-makes-ftc-withdraws-vertical-merger-guidelines#:~:text=In%20September%202021%2C%20the%20five,commentary%20on%20vertical%20merger%20enforcement
[1022] Nielson, N. "An introspection on the FTC's withdrawal of 2020 Vertical Merger Guidelines". 2021. In Competition Forum *available at* https://competition-forum.com/an-introspection-on-the-ftcs-withdrawal-of-2020-vertical-merger-guidelines/ .
[1023] Baker, J. B., Rose, N. L., Salop, S. C., & Morton, F. S. (2018). Five Principals for Vertical Merger Enforcement Policy. Antitrust, 33, 12.; Salop, S.C., A Suggested Revision of the 2020 Vertical Merger Guidelines, (July 2021) Antitrust Bulletin *available at* SSRN: https://ssrn.com/abstract=3839768 at 1.
[1024] Economides, N., Kwoka Jr, J. E., Philippon, T., Singer, H. J., & White, L. J. (2020). Comments on the DOJ/FTC Draft Vertical Merger Guidelines, NET Institute Working Paper, (20-04)

digital platforms to deter innovation in a specific market. Market foreclosure from vertical closures which can lead to termination of the innovative product entering the market and ultimately harm innovation was neglected. Furthermore, the 2020 Guidelines did not address the matter of dominant platforms that avoid the rise of disruptive innovation through individually inconsequential vertical mergers, which may collectively represent a threat to competition.

Indeed, the FTC's majority statement on the withdrawal of the 2020 Guidelines, addressed such shortcomings by stating that "the revised guidelines should pay greater attention to the broader set of tactics that firms may use to raise rivals' costs, as well as the impact of an acquisition on competitors' access to capital."[1025]

ii. The 2020 Guidelines do not properly address efficiency benefits (pro-competitive effects)

It is widely known that some commentators and even the enforcers tend to treat vertical mergers more permissively compared to horizontal mergers, based on the presumption that vertical mergers benefit competition regardless of the market structure. However, vertical mergers may create an inherent exclusionary incentive and potential for coordinated effects just like in horizontal mergers. For this reason the 2020 Guidelines were criticized for representing an implicit and strong procompetitive bias, especially in relation to treatment of EDM, which was criticized for failing to be justified by either economic theory or valid empirical studies.[1026]

Accordingly, Carl Shapiro stated that "the theory of EDM is that a vertical merger can promote competition by eliminating double markups that occur when two independent firms sell and then resell something."[1027] In some cases, EDM offsets the competitive harms of vertical merger, but in other cases it does not.[1028] Accordingly, the Guidelines were concerning for giving little attention to efficiency effects of vertical mergers and limiting such pro-competitive effects only with the EDM.

[1025] Ibid.
[1026] Salop S.C., *supra note* 1006.
[1027] Shapiro, C. & Hovenkamp, H., *supra* note 1010.
[1028] Ibid. *See also* Salop S. C, *supra* note 1023.

Another criticism was that the Guidelines did not speak of any burden of proof criteria regarding the efficiencies, which should be demonstrated by the defendant, who has better control over the relevant evidence.[1029]

iii. There is no framework for digital platforms

Digital platforms form a significant part of the current market economy yet the 2020 Guidelines did not provide any framework for digital platforms. As Nathalie Nielson puts forth "*digital platforms usually follow a pattern of creating a `core platform service` and then expanding into related markets, creating digital ecosystems `in which platforms and complementary products work together smoothly`.*"[1030] However when the digital ecosystem feature is combined with the rapid fluctuation of markets there may be uncertainty on the nature of mergers, as mergers who may appear to be vertical or conglomerate may, be considered as horizontal.[1031] The FTC also alluded to this fact in its majority statement on withdrawal[1032] and included these specifically under the RFI for its current review of the merger regulations.

iv. Further criticisms

It has been emphasized that the 2020 Guidelines should have included more detailed examples as to possible scenarios of input foreclosure as well as customer foreclosure,[1033] as such exclusionary conducts, have the potential to harm customers and market prices by raising downstream market prices.[1034]

Last but not least, Salinger has questioned whether the analysis of static pricing incentives should be as central to vertical merger enforcement as it is to horizontal merger enforcement, and criticized the 2020 guidelines a lack of clarity in identifying the distinguishing features of what would be vertical merger that would constitute a threat.[1035] Although the 2020 Guidelines include potential competition as a possible

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[1029] Hovenkamp H. J., "Competitive Harm from Vertical Mergers" (2020) Faculty Scholarship at Penn Law. 2218 *available at* https://scholarship.law.upenn.edu/faculty_scholarship/2218
[1030] Nielson (2021) *supra note* 1022.
[1031] Id, 1-4.
[1032] Statement of Chair Lina M. Khan, Commissioner Rohit Chopra, and Commissioner Rebecca Kelly Slaughter on the Withdrawal of the Vertical Merger Guidelines Commission File No. P810034, September 15, 2021, *available at* https://www.ftc.gov/legal-library/browse/cases-proceedings/public-statements/statement-chair-lina-m-khan-commissioner-rohit-chopra-commissioner-rebecca-kelly-slaughter
[1033] Salop, S.C., *supra* note 1023 at 3-4.
[1034] Moresi, S., & Salop, S.C., `Quantifying the Increase in "Effective Concentration" from Vertical Mergers that Raise Input Foreclosure Concerns: Comment on the Draft Vertical Merger Guidelines`, (2020), Georgetown University Law Center, Available at https://scholarship.law.georgetown.edu/facpub/2240/ at 3-5.
[1035] Salinger, M.A., "The New Vertical Merger Guidelines: Muddying the Waters", Rev Ind Organ 59, pages161–176 (2021)

theory for blocking a vertical merger, because challenges that are based on static pricing incentives are going to be difficult to prove, Salinger argues that the 2020 Guidelines are unlikely to have much of an effect on what mergers the Agencies successfully block. According to him, the focus on static pricing incentives rather than potential competition has muddied the waters instead of providing clarity to businesses, antitrust practitioners and courts.[1036]

d. What comes next

Following the withdrawal of the 2020 Guidelines, the DOJ noted that it will collaborate with the FTC in relation to a robust public engagement process to seek comment on improvement of the Vertical Merger Guidelines.[1037] To that end, the DOJ primarily remarked to recount merging parties' burden[1038] to establish that the EDM is verifiable, merger specific and will likely be passed through to consumers.[1039] Moreover, it was noted that the Guidelines should fully recognize the quantification of price effects and the range of circumstances that can lead to a concern.[1040]

In this regard, on January 19, 2022, FTC and DOJ released a joint Request for Information on Merger Enforcement ("***RFI***") seeking public commentary on the extent the Agencies can "modernize" merger enforcement by way of representing a clear skepticism for the conventional antitrust enforcement tools of analysis.[1041] Overall, the RFI notes that the Agencies should explicitly present that the consumer welfare standard should guide the analyses on the anticompetitive effects of mergers, by taking into consideration different perspectives of various stakeholders such as consumers, suppliers and merging parties.[1042] The RFI[1043] further indicates that the Agencies have a particular interest with respect to the aspects of competition that may have been underemphasized or neglected, such as non-price elements of

[1036] Id.
[1037] Indeed, the stated goal was to ensure that the Guidelines reflect current features of competition based on modern market realities, and follow the statutory text, legislative history, and established case law around merger enforcement as well as how the Agencies can assess whether a potential competitor could grow into a plausible competitor and the degree of such probability should be sufficient to condemn the proposed transaction.
[1038] Shapiro, C., "Vertical Mergers and Input Foreclosure Lessons from the AT&T/Time Warner Case", *Rev Ind Organ* 59, 303–341 (2021). p. 5-6
[1039] Salop S.C,. *supra* note 1023.
[1040] *Id*
[1041] Federal Trade Commission, Request for Information on Merger Enforcement, Document No. FTC-2022-0003 (January 18, 2022) *available at*, https://www.regulations.gov/document/FTC-2022-0003-0001
[1042] *Id*
[1043] *Id*

competition like innovation, quality, potential competition, or any trend toward concentration and labor market effects.

While the new Guidelines are under construction, the FTC will analyze mergers in accordance with its statutory mandate – with no presumption of efficiencies for any category of mergers and consideration of all relevant facts.

V. Conclusion

Increasing levels of interest and a new focus on issues relating to innovation have been observed in US competition law practice, both at the policy and enforcement levels.[1044] In the past, merger policy in the U.S. was mostly based on static analysis, which largely concentrated on how the transaction will influence pricing and often neglected vibrant factors like R&D.[1045] It was much later acknowledged in 2010 Horizontal Merger Guidelines that "competition often spurs firms to innovate"[1046] which implies that the U.S. competition authorities steer closer the idea that competition rather than market concentration fosters innovation and the Arrowian approach, rather than Schumpeter's. A specific section of the guidelines was devoted entirely to the issue of innovation, which provided antitrust agencies improved guidance on how to consider and assess innovation-related matters in merger control cases. This is in contrast to the novel approach that the Commission has recently adopted and the ambiguous concepts such as innovation spaces that it has utilized and been criticized for its lack of legislative basis. It may perhaps even be possible to say that such structured guidance has allowed the US antitrust agencies to avoid criticisms of speculative and overly invasive practices, especially in terms of dynamic innovative markets, however it remains to see whether this will be sustained in the upcoming revision of the guidelines.

Antitrust agencies in the US have examined merger cases under several different theories of harm. Besides their innovation-related evaluations on the potential harm to competition, US antitrust agencies have even considered the protection of

[1044] Dardano, V., *Assessing Innovation In Merger Control*, College of Europe, 2016, at 14.
[1045] Katz, M. L. & Shelanski, H. A., Merger Policy and Innovation: Must Enforcement Change to Account for Technological Change? In Jaffe A. B., Lerner J., Stern S. (ed.s) Innovation Policy and the Economy 5, 2005 p110
[1046] U.S. Horizontal Merger Guidelines, p. 23, (2010).

competition in non-existing markets.[1047] These innovation considerations, inevitably, have the downside of dearth of information: they cannot always be evaluated based on concrete evidence, or precisely measured with economic tools, thus there cannot possibly be a single set of standards for the examination of innovation-related issues in merger controls that will apply to every case. To that end, competition enforcement agencies should adopt a case-by-case approach to their analysis in terms of innovation considerations by scrutinizing the specific dynamics of the transaction and the market structure in each investigation. This is especially important in their assessments relating to technology markets, in which the single most important driving force of competition is innovation. Indeed, noting the lack of reliable presumptions in innovation and the challenges this brings, the DoJ conducted a fact-based approach in its assessment of the *Dow/DuPont* merger with respect to the US market, which resulted in a more limited request for the divestiture package as opposed to its European counterpart.[1048] As for the burden of proof, similar to the other jurisdictions, the onus is on the competition authorities to demonstrate the anti-competitive impacts of a merger, however when it comes to efficiency gains, the 2010 Horizontal Merger Guidelines puts that since these are difficult to verify and quantify partly because information related to efficiencies is possessed by merging firms, the burden to substantiate efficiency claims lies with the merging firms.[1049] The transaction entities may indeed have a ready understanding of their own capabilities and even their own expectations regarding efficiencies of the transaction. However, the researcher`s previous criticisms are still valid, as the relevant entities bear an asymmetrical burden while they lack the breadth of resources and access that agencies have. If deemed necessary, the agencies can request information from rivals and customers to understand the structure of the current and potential market, collect internal documents from and interview third parties, which are not usually possible for transaction parties. As the agencies themselves are not above wielding their swords and allegations of harm

[1047] *See FTC v. Steris/Synergy Health*, FTC File no. 151 0032 Dkt No. 9365 (2015) *available at* https://www.ftc.gov/enforcement/cases-proceedings/151-0032/sterissynergy-health-matter .
[1048] McConnell C. (GCR), *Innovation analysis lacks reliable presumptions, says US DOJ deputy,* (2018), *available at* https://globalcompetitionreview.com/article/1170347/innovation-analysis-lacks-reliable-presumptions-says-us-doj-deputy
[1049] U.S. Horizontal Merger Guidelines, p. 30, (2010).

occasionally even without sufficient proof, as demonstrated by the *Steris/Synergy* case, the innovation paradox is thus perpetuated.

It is worth mentioning that, while the 2010 Horizontal Merger Guidelines specifically deal with the concept of innovation, there was no such section devoted to innovation-related concerns in the vertical merger guidelines of 1984 and this does not seem to have substantially changed in the (now withdrawn) 2020 Guidelines. While it did refer to the ability to create innovative products in passing, the lack of reference to pro-competitive effects of efficiencies was one of the criticisms brought, which the Agencies may take into account in their in-depth review and re-construction of the new Merger Guidelines. Even though antitrust agencies are generally less troubled about non-horizontal mergers (as they were deemed unlikely to raise major anti-competitive concerns), it will certainly be worthwhile to consider incorporating a specific section regarding innovation considerations into such merger guidelines as well. If, a structured guidance has indeed assisted the antitrust agencies to formulate consistent and fair assessments with regard to horizontal mergers, it is very likely that emulating this for vertical mergers will prevent speculative or ambiguous action on part of the competition authorities.

Chapter 6

Conclusion

The concept of innovation, despite the controversies and negative connotations surrounding it throughout history, has in recent times gained a much more favourable perception. Considering that economic growth stems primarily from innovation, a fact repeatedly demonstrated by economic theorists, it should have been embraced wholeheartedly and incorporated into every facet of public strategies concerning development and economic growth. Nevertheless, there still seems to be a continued sceptical approach, especially by those competition authorities who (despite increasingly recognising the crucial role played by innovation) are still wary of fully integrating the concept into their assessments, and in particular, of the full potential of innovation efficiencies. Thus, the historical trajectory of the term`s negative connotation remains unbroken.

It is true that a uniform approach for innovation cannot be adopted; this might even contravene goals of competition rules since innovations may lead to different market structures and therefore a case-by-case and careful analysis must always be conducted for the markets or transactions concerned. The vital role of innovation in the development of economic dynamics, as demonstrated by Schumpeter, can affect local or international, traditional or dynamic markets in very different ways. Accordingly, this researcher does concede that competition authorities may need to intervene, in order to protect the incentives to innovate in the relevant market and ensure that undertakings do not exploit the emphasis put on the concept of innovation (similar to how the emphasis on sustainability and the environment has led certain firms to employ a `greenwashing` strategy). However, this intervention should be almost a measure of last resort, and only after a rigorous case-by-case analysis to make sure that no pro-competitive effects of innovation are disregarded, *i.e.*, the competition authorities should not dismiss out of hand the dynamic efficiencies claimed by the parties and (notwithstanding where the burden of proof lies) conduct full scale analyses to ascertain what innovative efficiencies could be achieved by the transaction, by employing all available resources at their disposal.

For this research, 76 cases were surveyed from the three jurisdictions (21 from EU, 20 from the UK and 35 from USA) to specifically review innovation concerns, defences and the authorities` approach thereto. It has proven to be a challenge to assess whether a different approach to innovation could have changed the outcome, because in a third of the cases (most of them comprising the challenges brought by the FTC) the defendants did not bring forward any specific innovation defences or respond to the authorities` concerns regarding innovation. One can speculate whether the reason for this was availability of other defenses to the parties to employ against the authorities` theory of harm regarding the transaction, or a defense strategy which focused more on non-innovation related arguments as a cost-effective method in the limited time granted, or preferring to settle and/or give commitments to get conditional approval as soon as possible. Of the remaining cases, where there have been innovation concerns, it has been very rare that the parties were able to alleviate them through their defenses, and usually have offered commitments or agreed to divesting certain assets to be able to continue commercial transactions.

Competition authorities may find it difficult to ascertain precisely at which point intervention would be deemed appropriate and justified. Especially in dynamic markets, circumstances can change rapidly, *e.g.*, a first-comer in a new market can engage in aggressive conduct, which may initially enhance consumer benefit and promote innovation, but once they are entrenched, their abusive behaviour towards new entrants down the line may mean that an intervention may be too late to prevent market distortion. Accordingly, running market specific analyses on a case-by-case basis, and conducting the correct assessment of harm and quantification of the detriment creates an important challenge to the authorities in how to put their increased advocacy in support of preserving and promoting innovation into actual practice.

The practices of the competition authorities in the EU, UK and US, discussed in the above chapters, indicate that the competition authorities in these jurisdictions are clearly aware of the link between innovation and competition. In general and specifically with respect to horizontal mergers, innovation concerns of competition enforcement authorities are mainly related to whether the merging parties can

internalize the constraint between the rival products and whether this may give the merged entity an incentive to reduce its innovation efforts. In extreme cases, the merged entity can even discontinue one of the products in order to avoid cannibalization of the other product's sales. However, impact of a merger can also result in dynamic efficiencies by combining the know-how and "brain power" of the undertakings, in addition to its financial capabilities and economies of scale. Thus, the assessment of the impact of a merger on R&D investments requires a complex balancing exercise involving several factors that affect the incentives to innovate. The fact that these factors exert opposing influences on the merged entity's incentives to innovate implies that it would not be accurate to presume that one effect dominates the other.

The finding in the theoretical models that a horizontal merger reduces innovation incentives is mostly based on the assumption that the merger does not create any efficiency gains. This finding could be reversed if the synergies resulting from mergers are taken into account properly. Besides, the results can differ when other factors (such as the *demand expansion effect* and *margin expansion effect*) are considered, as well. Competition authorities are also advised to contemplate and incorporate the welfare-increasing effects of information sharing and R&D cooperation between merging firms into their merger assessments. It is not a surprise that the R&D collaboration between competitors during the Covid-19 pandemic, especially during the beginning, to identify the most effective treatment options and development of vaccines had served to benefit consumer welfare and indeed, perhaps, saved the human race from a bigger catastrophe.

There is not a single overarching general theory on the effects of mergers on innovation, and the findings of current theoretical research papers themselves should be read and interpreted in light of the assumptions underlying a particular study. As for applying the conclusions of a given theoretical research study to a real-life/tangible merger case, one should therefore carefully consider how the assumptions of the relevant research study match up with the particular facts and circumstances of the merger under examination. Otherwise, imprecise assessments would result in overzealous interventions from competition authorities, that would most certainly preclude any efficiencies that may have been gained from the

transactions, to the detriment of the consumer benefit and economic growth. This means that the theories of harm related to innovation employed by the competition authorities are instrumental in shaping the future of the innovative sectors.

In terms of the practices of the European Commission, the theories of harm related to innovation have historically been based on the underlying principles of the EU Horizontal Merger Guidelines. The classic framework of the legislation left the Commission some room to maneuver for interpretation and case-by-case examination, since the legislation does not provide explicit or detailed guidance on how innovation concerns are to be assessed in merger reviews. The Commission has availed itself of this leeway and we observe that its approach to innovation has evolved over time, as demonstrated in the case law. The initial stance towards innovation considerations in merger control had been based on utilizing the traditional tools available to the Commission. Therefore, its theories of harm were based on the SIEC, and the relevant product-markets were clearly defined, the focus was on developed pipeline products, rather than those pipeline products in their early stages. The Commission assessed the competitive pressure applied by competitors and by the transaction parties themselves, to one another. The criteria for assessing these elements were symmetric. Last but not least, the standard of proof for verifying the assessment of these elements was substantially high, by incorporating information sources from the field, sector participants, competitors, and the transaction parties, amongst others.

Notwithstanding this "traditional" starting point, the Commission's approach gradually evolved into the novel approach; most significantly demonstrated in its decision on the merger of Dow and DuPont, in 2017 and continued in the *Bayer/Monsanto* and *Chem China/Syngenta* cases. The foremost difference from the traditional approach was the introduction of a novel theory of harm, namely, the assessment of competition for "significant impediment to effective ***innovative*** competition." This new methodology has also introduced the concept of "innovation spaces" into competition law assessments, as opposed to the classic and constrained analysis of "relevant market" which is the bedrock concept of competition law. Furthermore, the potential subject of such competition law analysis was also extended to encompass early-stage pipeline products, which may lead this new methodological approach to

reach conclusions with less predictive ability about products whose futures are more uncertain, if not highly speculative. As for the standard of proof, the Commission has examined and relied on internal documents in both the *Dow/DuPont* and *Bayer/Monsanto* cases, despite criticisms of commentators that the subjective nature of such evidence fell short of the evidentiary criteria that they would have expected the Commission to consider.

It may seem that under the novel approach, the Commission builds its assessments of the effects of mergers on innovation competition mainly on (i) characteristics and structure of the market, (ii) the importance of the merging parties as innovators, (iii) the intensity of innovation rivalry between the merging parties in innovation spaces, (iv) the impact on the incentive to innovate and evidence on the effects of innovation, and (v) the capacity of the remaining competitors in the relevant market to offset the loss in innovation competition as a result of the merger. Having said that, despite recognizing that its traditional tools are inadequate, one wonders whether the replacement has not been intrusive or ambiguous. Furthermore, the relaxation of boundaries in terms of the markets/products assessed or the standards of proof seem to be flowing only towards one direction: The Commission has made it easier for itself but not for the transaction parties, who are still required to demonstrate in their defenses that any efficiencies will be merger-specific, quantifiable and verifiable.

From our analysis it is apparent that the competition authorities still have to fine-tune their approaches, especially where innovation is being used as a defence, and recognize the opportunities offered with the transaction as a counter-balance to any threats they perceive. The competition regulators recognize the need to move away from static analyses for dynamic markets however, they still require much convincing in order to embrace and give weight to what may be less concise economic analyses and estimations in terms of dynamic benefits. There has been extensive work by the competition authorities, independent experts and scholars to assess the competitive and regulatory needs of dynamic markets, especially in the context of digital markets. Yet, despite authorities` self-proclaimed stance as proponents of innovation, their first instinct still seems to be one of wariness and scepticism towards the intentions of the transaction parties, and a leaning towards what may

turn out to be overzealous intervention. In fact, most recently, the EU has agreed to regulate these markets through the Digital Markets Act, which is designed to limit the market power of big online platforms and ensure fair competition on the Internet, albeit without overregulating the small businesses. It remains to be seen whether this regulatory framework shall indeed serve to achieve their intended target of "more competition, more innovation and more choice for users." [1050]

The consideration of innovation-related issues in the UK has shown much variation, depending on, among others, (i) the market (*i.e.,* sector) characteristics, (ii) the incentives of the transaction parties to innovate, (iii) the number of innovative competitors in the market, and (iv) the general characteristics of the products or services in question. The UK competition authorities appear to handle theories of harm under both "horizontal and vertical issues" yet there were cases in which the CMA chose not to implement this reasoning. Nevertheless, the most important issues which the UK competition authorities focused on were the parties' motivation to innovate, and the effect of the transaction on the number and capabilities of innovative competitors after the transaction. Having said that, it is also observed that this approach is not much adopted for traditional sectors, and UK competition authorities – subconsciously or perhaps due to unique market characteristics- tend to focus on innovation assessments in certain particular sectors, such as electronics. This is evinced in one of the earliest decisions, *Bayard Capital / Landis & GYR* (2004), where the OFT deemed innovation as a significant dimension of competition in the electronics sector.

The UK competition authorities' breadth and depth of regulatory approach, that does not rely on a strict methodology or a limited number of guidelines to follow, also leaves more room for further developing their policies and procedures. Similar to the EU, in the last few years they have directed their attention to effective competition in digital markets and recently a Digital Markets Unit has been established within the CMA, "to regulate the most powerful digital firms, promoting greater competition and innovation in these markets, protecting consumers and businesses from unfair

[1050] European Parliament Press Release (Mar 24, 2022) "Deal on Digital Markets Act: EU rules to ensure fair competition and more choice for users" *available at* https://www.europarl.europa.eu/news/en/press-room/20220315IPR25504/deal-on-digital-markets-act-ensuring-fair-competition-and-more-choice-for-users

practices."[1051] The regulatory structure is planned to be designed with a proportional approach that will avoid over-regulation that would stifle innovation, and instead, create conditions that will incentivize it and also allow new entrants into the various markets to effectively compete with incumbents.[1052] Although this is geared towards digital markets, it may perhaps influence the UK competition authorities` to adopt an even more balanced approach for dynamic efficiencies as defenses in other markets, as well.

It is now apparent that the effect of Brexit on the UK's merger control regime will be based on a no-deal Brexit and on the details of the withdrawal agreement. The UK is trying to set a pro-innovation, pro-technology stance that will attract new start-ups, innovators and hence investment into the economy, while ensuring a pro-competitive regime. While it is not yet clear to what extent the CMA will apply the mechanisms and theories developed by the Commission in evaluating innovation, the stated intent seems to be to steer away from over-regulating. Having said this, the analysis of the CMA decisional practice in the first year following Brexit has shown that in a substantial number of cases, they have acted in unison with the Commission. Yes, there have also been a couple of cases where the CMA`s decision diverged from the Commission, however, two does not make a trend and thus it remains to be seen whether the CMA will actually venture to test out new waters regarding innovation assessments in merger control.

In case of US competition law practice, we have demonstrated there has been an increasing level of interest and a new focus on issues relating to innovation, both at the policy and enforcement levels. The 2010 Horizontal Merger Guidelines provided guidance to the agencies on how to consider and assess innovation-related matters in merger control cases, in contrast to the Commission`s "novel approach" and the ambiguous concepts it has utilized such as innovation spaces, criticized for lack of legislative basis. It may perhaps even be possible to say that it was such structured

[1051] Competition and Markets Authority on the Digital Markets Unit (updated on July 20, 2021) *available at* https://www.gov.uk/government/collections/digital-markets-unit

[1052] Philp, C., UK Minister for Tech and the Digital Economy speech at Digital City Festival (March 9, 2022) *available at* https://www.gov.uk/government/speeches/minister-for-tech-and-the-digital-economy-speech-at-digital-city-festival

guidance that allowed the US antitrust agencies to avoid criticisms of speculative and overly invasive practices, especially in terms of dynamic innovative markets.

Antitrust agencies in the US have employed several different theories of harm when examining the merger cases. In addition to evaluation of the potential harm to innovation in competition, US antitrust agencies have even considered the effects of the transaction on competition within non-existing markets. Unsurprisingly, the main problem with such innovation considerations is the dearth of information: considering that there is yet no way to measure a potential, non-existing market with economic tools, they cannot always be evaluated based on concrete evidence. This means that there cannot possibly be a single set of standards for the examination of innovation-related issues in merger controls that will apply to every case. As reiterated throughout this work, this demonstrates the need for competition enforcement agencies to adopt a case-by-case approach to their analysis in terms of innovation considerations, by scrutinizing the specific dynamics and effects of the transaction and the market structure in each investigation. This is especially important in their assessments relating to technology markets, where the single most important driving force of competition is innovation.

Although the 2010 Horizontal Merger Guidelines in the US have specifically addressed the concept of innovation, there was no such corresponding section in vertical merger guidelines for a long time. We saw that the 2020 Guidelines which the FTC and Department of Justice jointly issued, indeed referred to the ability to create innovative products under the procompetitive effects, which demonstrated at least the intention to recognize innovation as an efficiency defense. But considering that the 2020 Vertical Merger Guidelines were withdrawn in 2021, and is currently undergoing a careful scrutiny by the agencies, the final product may turn out to have a whole different view. A structured guidance has indeed assisted antitrust agencies to formulate consistent and fair assessments with regard to horizontal mergers, but whether the revised version of the vertical merger guidelines will still embrace innovation or reflect the other competition agencies` propensity to focus on

competition in the market without taking into account future effects and evolution and a more intrusive approach,[1053] remains to be seen.

It is, thus, apparent that we are still seeing a skeptical approach to innovation, despite its incontrovertible role in economic growth and efficiency. The competition authorities` assessment of digital markets may be an indication of how they see any fast-evolving, innovative, future-oriented and therefore inherently imprecise markets. As they emphasize their role in protecting the competition in the market *"as is"* today, they are ignoring their duty to promote innovation which would expand services, products, markets, or incentivize efficient processes that would stimulate growth. While we do not and should not condone those utilizing alleged efficiencies defenses to whitewash their intentions, it is far too easy for authorities to say "no" outright to any case that comes before them. What is crucial to understand here is that, unlike the transaction parties themselves, the competition authorities have a bird`s eye view of the whole market in question, its dynamics and potential efficiencies; they have the power to request data from market players, third parties, even consult with competition agencies in other countries, if they had the inclination to do so. It is therefore even more important that, notwithstanding where the burden of proof lies, the authorities strive to closely assess each case, by employing counter-factuals and by using their own information and analytical resources, and not hesitate to step outside the traditional methods that do not address the dynamics of the innovative markets, in order to achieve the maximum potential economic growth. It is actually discouraging that the above discussed recent regulations in developed economies indicate that authorities may actually adopt an intensified and more intrusive antitrust enforcement. An overzealous approach is the simpler solution for sure, but may be more expensive and even damaging, as it may prove to be a turn-off for the entrepreneurs, to the detriment of consumer welfare. Unless this is recognized, the maximum of potential economic growth may unfortunately never be achieved.

[1053] Kanter, J, Remarks by AAG Jonathan Kanter of the Antitrust Division to the New York State Bar Association Antitrust Section (Jan 24, 2022) *available at* https://www.justice.gov/opa/speech/assistant-attorney-general-jonathan-kanter-antitrust-division-delivers-remarks-new-york

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