



The Assessment of Innovation Effects in EU Merger Control

With specific focus on the Dow/DuPont decision and Start-up Acquisitions.

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Abstract

The purpose of merger control is to protect the market structure from anti-competitive effects arising from a transaction. Several factors come into play here, including price effects, the strengthening of a dominant position or the removal of a competitive constraint.

The primary purpose of this paper is to investigate and evaluate innovation considerations within EU merger control. The paper further considers how this framework has been affected by the Dow/DuPont decision and whether it is adequate to protect innovation created by start-ups.

The assessment of innovation effects in mergers seems to be continually evolving, with the Commission's decisional practice proving to be exceedingly adaptive. The Dow/DuPont decision has generated a substantial debate on the topic of innovation in merger control and the motivations behind it, and this debate will form the basis of the discussion in this paper.

Further, the Commission's other decisional practice as well as their merger Guidelines will be evaluated, to attempt to outline how innovation effects are handled within merger control in a broader sense. Additionally, several academic reports, including the report published by the special advisers to the Commission, will be used to evaluate the functionality of this framework in the protection of start-up-based innovation. Throughout the essay, a Law and Economics analysis will be carried out alongside the general EU legal method used.

The overall analysis has led to the conclusion that innovation is generally well protected under EU merger control. Specifically, the criticism levelled at the Dow/DuPont decision warrants caution for the continuing development of innovation-related decisional practice, but the wealth of academic writing written on conjunction with the debate has certainly made the prospect of gathering evidence for future cases easier.

The Dow/DuPont decision, and indeed the merger control regime in general, was found wanting when it came to the protection of start-up-based innovation. Results showed that a model emphasizing a "digital ecosystem" for incumbents in the digital sector could solve many of the shortfalls of merger control in this area so far. In addition, changes to the functioning of the notification of mergers could also be considered.

It is hoped that this paper will contribute meaningfully to the debate it aimed to describe, as well as aiding academics and students who seek to learn about this area of Competition Law.

Abbreviations

DG COMP	Directorate General for Competition
ECJ	European Court of Justice
EU	European Union
EUMR	EU Merger Regulation
FAANG	Facebook Amazon Apple Netflix and Google
GC	General Court
HHI	Herfindahl-Hirschman Index
HMG	Horizontal Merger Guidelines
ICT	Information and Communications Technology
IPR	Intellectual Property Rights
JV	Joint Venture
NHMG	Non-Horizontal Merger Guidelines
R&D	Research and Development
SIEC	Significant Impediment to Effective Competition
TEU	Treaty on European Union
TFEU	Treaty on the Functioning of the European Union
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights
UPOV	International Union for the Protection of New Varieties of Plants

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1 Introduction

1.1 Background

Innovation has been a driving force behind the development of civilization since ancient times. Its importance has only continued to increase, and with the advent of the liberal market economy, competition between companies to sell products have encouraged them to innovate, bringing better and better products to consumers. The EU itself is based on these free market ideals, with a stated goal to create a common market and increase competition. Innovation and the drive to invent and improve is not only important for the furthering of society, but also for long-term economic growth. Europe has been the birthplace of many important innovations and furthering competition in innovation could help give rise to even more. In this essay, I have chosen to specifically focus on protection of innovation competition in merger control.

The framework for assessing and protecting innovation competition within the EU merger control regime has been continuously evolving, with the Commission's focus moving further and further back into product development cycles. With the decision reached in Dow/DuPont, the protection of innovation in merger control appears to have reached a new zenith. This essay will attempt evaluate the innovation effects framework, with a specific focus on the developments brought forward by the Dow/DuPont case.

Additionally, the increasing focus on digital markets in competition law enforcement has brought with it an even higher focus on protecting innovation as a policy goal, with rapid-fire technological developments challenging conventional models. Although innovation competition in merger control has been a part of the regime almost since the adoption of the EUMR,¹ views on innovation have mostly taken a static outlook, with it mostly being considered an output, with primary assessment centered on assets.

Today, start-ups in the digital sector have become a significant vector for innovation, which raises the question if this area is sufficiently protected by anti-trust enforcement.

¹ ICI/DuPont, in which remedies were proposed on innovation competition grounds, para 48

1.2 Purpose and Research Questions

The main purpose of this essay is to investigate how innovation is protected and furthered under the EU merger control regime. This is further subdivided into two parts. The first, is to provide an overview of innovation in merger control leading up to, and after, the Dow/DuPont decision. The second is more conceptual, and aims to provide a look at how, and if, the EU merger control regime is equipped to protect innovation arising from start-ups. In order to better guide the work, the following questions will be used:

1. In what way is innovation taken into account in the merger assessment? How is this affected by the decision in Dow/DuPont?
2. Is the current merger control framework sufficient to protect innovation generated by start-ups? Has the Dow/DuPont decision affected this assessment?

1.3 Method and Material

The initial part of the essay is primarily concerned with European legal practice, while the second is of a more conceptual nature. The EU Legal Method and Law and Economics will be applied in parallel during the resolution of both. In this section these methods used in the writing of this paper will be discussed.

The first method, the EU legal method, its usage in relation to the main sources of this paper will be discussed first. Thereafter, the application of Law and Economics will be described. Note that the specific economic theories to be used as the main guidelines during the writing of this paper is not discussed within the Law and Economics section. That section will instead be focused on the method itself, with economic theory following in the next chapter.

1.3.1 The EU Legal Method²

The young EU legal framework has a somewhat unique status in regard to both national and international law, developing its own system of norms and legal sources both separate and part of national jurisdictions, thus existing on two levels. The EU courts have maintained its primacy in relation to national jurisdictions, and EU law is often looked at and interpreted separately, examined on the supranational level. The methodology used when assessing EU law

² EU-Rättslig metod, chapter 1.

is often termed the “EU Legal method”, which is what will be used when the first question is addressed.³

Since the treaty of Lisbon, the division of what was previously the “three pillars of EC Law” has ceased. In its place, a more unified hierarchy has emerged, with the treaties on top as *Primary Law* and various other sources of *Secondary Law* beneath them.⁴ Secondary law is further subdivided into *binding* or *non-binding* secondary law.⁵ Binding secondary law include such legal acts as a Regulation or a Directive authorized by article 288 in the TFEU.⁶ Non-binding secondary law (or “soft law”) includes the recommendations and opinions mentioned in the same article. In addition to this, there are a several types of non-binding publications, such as the various guidelines issued by the Commission. In a field like Competition Law, guidelines are regularly issued by the Commission in order to elaborate on the application of rules, for example the HMG and NHMG on the application of the EUMR.⁷ The legal importance of soft law varies. In some areas, like Competition Law, the Commission operates with more discretion (the so-called *margin of appreciation*) in its decisional practice, which allows it to, in some ways, shape policy. By issuing guidelines, future use of this discretionary power can be clarified. These clarifications can also act as limitations, because future decisions will have to adhere to the guidelines, and since the courts will usually monitor this adherence in later investigations of legality, guidelines which limit discretion in this way can be binding. It is worth noting that Commission decisions can be subjected to the courts on the basis of legality, which limits their precedential value somewhat, in comparison to judgments made by the court.⁸ This also needs to be taken into account when working with sources recommending changes to the Commissions decisional practice, as well as if such recommendations are to be made in this paper itself.

1.3.2 Use of doctrine as an EU legal source

Unlike in Swedish national courts, the courts of the EU never specifically refer to legal doctrine, which does not mean that it is not taken into account. It is frequently used in the opinions written by the Advocate-General, where views expressed in the legal doctrine are reviewed and sometimes used as grounds for the final recommendations to the court. It is also worth noting that references

³ It is also worth noting that there is no single “EU-legal method”. Here it is meant to describe the way in which sources are chosen and addressed within this work, which is EU-specific.

⁴ EU-rättslig metod, page 39.

⁵ Ibid, page 40.

⁶ Ibid, page 42.

⁷ Itself a good example of a binding secondary law source.

⁸ Commission decisions subject are to legality review as per article 263 TFEU.

to doctrine are also regularly made by applicants to the court, which could help shift the decision.⁹

The policy recommendations as laid out in the second part are mainly written by academics, often looking for specific solutions. As such, some of their recommendations may not match what is currently possible to attain by decisional precedent or regulation and adhering to such recommendations could be met by disapproval from the courts. For example, this could happen where a recommendation goes against one of the general principles developed by the courts.¹⁰ Greater care needs to be taken when addressing doctrinal sources than when working with decisional practice.

1.3.3 Law and Economics

Economic theory in jurisprudence is generally considered auxiliary to the main task of legal research, determining the content and effect of the law. The EU and its legal order as designed in the treaties, however, rests upon the economic concerns underpinning its foundational and main objective, establishing and maintaining the inner market.¹¹ Nowhere is the trickle-down of economic theory into legal practice more evident than in the field of EU Competition Law, where economic efficiency assumptions underpins its foundational treaty articles.¹²

The following section aims to explain why I deem economic theory necessary in the resolution of my research questions, as well as providing a general review of its importance as “a source to legal sources” within EU Competition Law. The primary source used will be the parts regarding the methodology of Law and Economics found in the doctoral dissertation *Promoting Innovation? A Legal and Economic Analysis of the Application of Article 101 TFEU to Patent Technology Transfer Agreements* written by Vladimir Bastidas Venegas.¹³ Although the economic sources used throughout the text itself will differ, my view is that both his description of the method itself as well as the motivations for using it can be held to a high standard.

One of the main benefits of using Law and Economics (or Economic analysis of Law) as a method, is to identify economic policy goals, such as the furthering of innovation, within legal decision making.¹⁴ The theory regards the study of legal sources alone insufficient, considering an additional embedded analysis of cost and effect necessary. It rather holds that the law is not autono-

⁹ EU-rättslig metod, section 1.10

¹⁰ And more concretely, the right to defense for corporations.

¹¹ EU-rättslig metod, page 122

¹² EU-rättslig metod, page 123, article 101 TFEU.

¹³ Senior Lecturer in Competition Law at Uppsala University.

¹⁴ Bastidas Venegas, p27

mous, and open to influence from outside forces, such as societal and economic pressure. It is perhaps most famously associated with the Chicago School and its primary focus is on economic efficiency, but its historical use in competition law dates back much earlier.¹⁵ It was used in the early development of American Antitrust Law, in the introduction of its premier legal source, the Sherman Act. The application of Law and Economics as a method in Competition Law is considered to be a traditional approach. Nevertheless, its usage will be further motivated below.

1.3.3.1 Usage

Competition Law deals with the operation of markets. Even in its most basic form, the purpose is to influence the behavior of actors on these markets, preventing detrimental actions causing damage to other actors or consumers.¹⁶ Economic theory can be used as a predictor of such actions by individuals, and groups of individuals (such as market actors), as well as the production, distribution and management of resources in society.¹⁷ In such an inquiry, legal rules also play a part when attempting to determine behavior. Bastidas Venegas posits that if economic theory can predict human actions with a degree of accuracy, it may also be used in the design of legal norms to guide them.¹⁸ In the same way, economic theories can be used to evaluate existing legal norms and their effect on behavior and on the production, distribution and management of resources. These terms¹⁹ were specifically chosen *in lieu* of terms like welfare, efficiency or utility, to avoid association with schools of economic thought in which the latter terms hold a conceptual role.

An essential point to consider in the usage of Law and Economics, is the difference in goals, both legal and economic, behind various legal norms.²⁰ Other values than the strictly economical might shape their inception and their goals, which could be afforded a higher value. Different schools of thought in competition law have different outlooks.²¹ This is exemplified by Bastidas Venegas with the difference between the Ordoliberal School on which European Competition Law was founded and the Chicago school. The Ordoliberals pursue political and economic freedom, while adherents of the Chicago School instead pursue the highest levels of economic efficiency.²²

¹⁵ Bastidas Venegas, page 27-28.

¹⁶ Ibid, page 28.

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ “[E]ffects on human action and on the production, distribution and management of resources”.

²⁰ Bastidas Venegas, page 28

²¹ Ibid.

²² Ibid. page 28

EU Competition Law has economic efficiency as one of its main policy goals, and concepts rooted in economic theory are common.²³ The usage of economic theory is heavy, even outside legal doctrine in the decision making of both the Courts and the Commission. Analyzing the legal norms within this field is thus not limited to legal theory, but specific economic theories may also be brought in and researched, in order to achieve an understanding.

Using an economic theory to analyze law brings with it a set of values inherent in that theory.²⁴ In the case of this essay, the legal norms will be evaluated based on the objective of furthering innovation in a given market structure, given the scope of the essay and the economic theories chosen. In my view, this can be done without eschewing the other values placed under the protection of the competition law regime, if its place within the larger structure is kept in mind. In part, this can be accomplished by the complementary nature of the methods applied.

1.3.4 Material

The legal sources used to investigate both areas will primarily be secondary law. Since the topic is innovation in merger control, the merger regulation naturally forms the basis. Elaborating on the application of the merger regulation are the horizontal and non-horizontal merger guidelines, which are heavily referenced in the decisional practice. Specific paragraphs of both guidelines will be used to establish an initial overview of the Commissions views on innovation competition. These guidelines are not legally binding and are considered soft law.

The main source material, however, will be decisional practice from the Commission, focusing on cases where innovation played a large part in the final outcome. Cases are, similarly to the guidelines, subdivided into horizontal and non-horizontal. Specific focus will be awarded to innovation considerations in the Dow/DuPont decision, because it seems to indicate a significant step forward for the assessment of innovation in merger control. Additionally, it has generated considerable debate. Several articles will also be referenced, in order to also present views, both negative and positive from outside the Commission.

The decisional practice will serve more as a backdrop in the attempt to resolve the second question, with the main sources instead being academic papers. The Commission recently tasked three academics from outside its ranks, special advisers Jacques Crémer,²⁵ Yves-Alexandre de Montjoye²⁶ and Heike

²³ Bastidas Venegas, page 30

²⁴ Ibid, page.29

²⁵ Professor of Economics at the Toulouse School of Economics.

²⁶ Assistant Professor (Data Science) and head of the computational privacy group at Imperial College London.

Schweizer²⁷, to write a special policy report on competition law in digital economy, in order to provide the Commission with an outside perspective. This report paints the authors suggestions for a digital competition with broad strokes, with a latter part focusing specifically on recommendations for merger control, and it will serve as one of the main sources for the second part. Some of the work references an earlier paper on a similar subject written by Marc Bourreau and Alexandre de Streel, *Digital Conglomerates and EU Competition Policy*, which I have also decided to use as a source. This paper has the benefit of aiming for a more specific target, as it were, and its investigation is more concentrated than the advisers' report. There are some overlaps between the reports and care will be taken to avoid repetition where necessary. Certain non-academic sources will be utilized where appropriate, such as when describing the Lean start-up business models and its features.

1.4 Delimitations

One major delimitation for this work is the omitting of remedial issues from analytical focus. Remedies are only touched upon as a consequence resulting from the assessment of innovation, and the way in which a remedy might be designed to further innovation post-merger is not taken into account. This essay focuses on the implications of innovation on the investigations themselves, a further delve into the intricacies of commitments risks derailing the original purpose of the essay.²⁸

One other major delimitation in relation to the source material is the discussion on burden of proof found within the papers consulted in the start-up acquisitions part of the essay. This decision was made because the suggestions outlined could be considered unrealistic in relation to the practical concerns facing the Commission. Because they operate under the scrutiny of the Courts, it is my opinion that they are unlikely to shift their decisional practice in this direction unless directly prompted by new legislation.

In addition, the chapter concerning start-up acquisition will generally omit discussions of IP-rights as they pertain to the appropriability of innovation. I considered some IP related questions during the preparatory phases of the chapter on start-ups, and several issues arose. Firstly, the ever-increasing transparency for industry in general and for software specifically decreases the value of IPRs for the appropriability of innovation. Today, skilled coders could be able to circumvent patent standards, achieving the same result through a differ-

²⁷ Professor at the Humboldt University Berlin.

²⁸ Kalpana Tyagi's dissertation, *Promoting Competition in Innovation Through Merger Control in the ICT Sector*, used as a source below, has a well written discussion on innovation-enhancing remedies design.

ent application. In my opinion, this is something that is better considered under a different subject than merger control, for example an essay written specifically about IPRs, which means the analysis on appropriability for start-ups in the digital economy will be limited to copying in general.

Finally, no comparisons to United States merger control will be made. All issues will be handled from an EU perspective exclusively.

1.5 Disposition

The first part of the essay will provide an overview of innovation and the main economic theories used. Following that is a general overview of innovation within the current EU merger control regime, divided into two parts, Horizontal and Non-Horizontal. These sections will first cover the soft law of the guidelines, before moving into an overview of the Commission's decisional practice, with some court judgments where applicable. This will be followed by a chapter on the Dow/DuPont merger specifically, with the first half concerning the decision itself and its background and the second half being comprised of discussion and analysis. The final chapter will deal with start-up acquisitions, beginning with an overview of start-ups as a vector for innovation. This chapter continues with a discussion similar to the one in the Dow/DuPont chapter, where different points of view are presented and analysed within the framework. Ending the essay will be a short summarising chapter, reviewing the results and offering my final opinions on what I consider the main findings of the text.

2 Innovation Concepts and Economic Theory

2.1 Introduction

The purpose of this chapter is twofold. First, it aims to provide an overview of the economic theories used for the Law and Economics analysis. They were chosen both because of their ubiquity in the study of innovation in the functioning of markets, as well as their ease of combination with the overall legal analysis. The concepts developed by Shapiro in particular will be repeatedly utilised throughout this paper, as his work was written with competition enforcement in mind. All theories used agree that competition enforcement should attempt to protect the process of innovation, by maintaining open markets. They all value and work towards innovation as a goal by protecting the process, similar to the way in which the foundational Ordoliberal School aimed to protect the process of competition.

The second part is dedicated to defining and explaining different types of innovation, with the first question primarily being focused on sustaining innovation, with the R&D practices examined in Dow/Dupont being the prime example, and the second being focused primarily on disruptive innovation in digital markets. Special focus will be dedicated to illustrating the different nature of disruptive innovation compared to sustaining.

2.2 Economic theories

2.2.1 Creative Destruction (Schumpeterian School)

Usually associated with the Austrian²⁹ economist Josef Schumpeter, the concept of “creative destruction” holds that disruptive force is the driver behind economic growth.³⁰ Already established companies and monopolies might see their value destroyed by this process, driven to obsolescence by evolving products, process and organizations. Creative destruction is the result of this evolution. Maintaining a monopoly is not seen as too problematic, seeing as new and

²⁹ Both by economic school of thought and birth.

³⁰ Schumpeter, pages 82-83

innovative ideas and entrepreneurs would eventually usurp it. Temporary monopolies created by technological innovation³¹ are necessary as an incentive for firms to continue innovating. Schumpeter argued that market power originating from innovation was better than price competition in this regard, and the lack of competition on a market is therefore not considered to be non-conducive to innovation. The reward of a temporary monopoly could instead entice innovation-based competition *for* the market, not in it. In theory, this would also encourage the leading firms to increase their own innovation in order to not lose their advantageous position; leaders underestimating the importance of innovative developments and failing to adapt to them may see themselves usurped in turn.³²

“Big business”, operating in monopolistic or oligopolistic markets may have contributed more to technological developments than they have hampered them, according to Schumpeter’s theory.³³ He argued that smaller firms optimized for “perfect competition” would not always be optimized for optimal innovation gain as well.

Examples include the ongoing shift from land line telecommunications to mobile, the shift from storefront based retailing to online options and the replacement of the cottage industry by factories, as well as many other types of consumer products now rendered obsolete by technological change.

2.2.2 Kenneth Arrow

Kenneth Arrow argued that incentives to innovate were more significant *in* a competitive market.³⁴ In a competitive market, he assumed that the competitive pressure would make firms attempt to improve their offerings in order to be better able to compete with rivals. A firm enjoying a monopoly position on the other hand would see its profits from innovating not being high enough to motivate innovation spending, instead holding an innate interest in the status quo. The Arrowerian model showed that a monopolist would always see a cost increase in competition costs post-innovation, compared to an inventor without a monopoly, who would see his costs decrease. The incentive to innovate will thus always be higher for a non-incumbent, regardless of capacity. Appropriability,³⁵ however, was shown to be greater for a monopoly, rather than under competition, which Arrow regarded as the only viable argument for regarding a monopolist’s incentives to innovate higher than firms under competition.

³¹ And achieved by firms willing to create and exploit it.

³² For example, IBMs failure to recognize the potential of the market for operating systems for IBM PCs, losing their position to Microsoft.

³³ Schumpeter, page 82

³⁴ Arrow, pages 621 and 62,

³⁵ Term described and defined below.

Without elaborating further, he stated that such differences would have to be weighed against the aforementioned profit disincentive.

He did regard temporary monopolies, created by previous innovations, to be more competitive than monopolistic in his analysis, which is also worth noting.

2.2.3 Carl Shapiro³⁶

Carl Shapiro has attempted to consolidate both theories to create a framework for judging how conducive a market structure is to innovation. A short overview of his work and the concepts developed therein will follow. Shapiro's principles

2.2.3.1 Examples from both theories

Carl Shapiro exemplifies some real-world variations of Arrow's and Schumpeter's theories in action, which shows the usefulness of both theories.

The Arrowerian model, favoring competition between firms without incumbency positions, lends itself well to explain disruptive innovations driven by start-ups and other market entrants. This could in turn increase incentive to innovate for previously R&D inactive incumbents. These same incumbents tend to resist innovation, by not wanting to cannibalize their own profits or to lose an existing customer base.

Schumpeter's theory is instead exemplified by pointing out that some concentrated markets (the one for agrochemicals comes to mind specifically) are prone to rapid innovation, with larger firms often being able to maintain a higher development standard than smaller ones. In addition, larger firms in general could see greater return from refining their processes, thus increasing the incentive to innovate in order to increase production, while a smaller firm without scalability in production lacks this. A healthy start-up acquisitions market is also exemplified as an area where a strong incumbent may promote innovation in its market. By acquiring innovative start-ups, larger firms could accelerate the spread of their innovation.³⁷

2.2.3.2 Reconciliation

³⁶ Shapiro, pages 362-364.

³⁷ As will be noted further below, many of the highest valued start-ups have achieved their current value by being acquired by another firm. In addition, it should be noted here as well that possible acquisition could be a significant motivator behind start-up generation.

In an attempt to reconcile the positions of the Arrowerian and Schumpeterian schools on the furthering of innovation³⁸, Shapiro put forward three principles compatible with both theories: Contestability, Appropriability and Synergies.

Contestability is important both in competition *on* the market and *for* the market. It is best explained in relation to sales. A contestable sale is one that is possible to acquire from a competitor, which is far easier regarding products that customers easily can switch between than when switching is hard.³⁹ If sales on the market are highly contestable, the companies active on it have a higher incentive to innovate, both in the interest of gaining sales from competitors by offering alternative or better products and to protect their existing sales base from competitors seeking to do the same. Conversely, with lower contestability in sales comes lower incentive to innovate, quite in line with Arrow's theory of product market competition furthering innovation. With his model, the incumbent monopolist would have a low motivation to innovate because there are no market shares left to conquer. Because the ability to acquire market shares through innovation⁴⁰ (from outside the market) is central to Schumpeter's theory of creative destruction, contestability works to explain some of it as well. Rewarding a highly innovative firm with temporary (even monopolistic) market power for its innovation, this serves to promote innovation on the whole. This makes contestability vital for both theories.

Appropriability concerns the ability of firms to capture the effects of their innovations, and their profitability enhancing effects. For example, through protection of intellectual property rights. If competitors can easily imitate, or otherwise steal the fruits of their (usually expensive) innovative labor, the innovator is relegated to seeing his competitive advantage vanish. Incentive to innovate depends on innovators actually profiting (or expecting to profit) from their efforts and through imitation this incentive is reduced. Shapiro stresses the importance of patent rights and trade secrets to maintain appropriability and counteract this phenomenon.

Schumpeter posits that a competitive market will not innovate just because it is competitive, which fits with the theory of appropriability. On markets where imitations happen fast and companies cannot make use of their own innovations, competition in itself may not provide sufficient incentive to innovate, in turn making the previously mentioned contestability insufficient as well. Appropriability can also serve to increase incentive to innovate for temporary market shares, which, as noted above, is central to Schumpeter's theory. Low appropriability could instead entrench monopolies. If appropriability is high, a competitive market increases firms' ability to turn innovation into profit, in line with Arrow's theory.

³⁸ In competition policy.

³⁹ Exemplified by, Inter Alia, brand loyalty and cost of switching.

⁴⁰ See the section on disruptive innovation below.

Synergy concerns the ability rather than the incentive to innovate. It means, generally, the combination of assets to enhance innovation capabilities.⁴¹ Naturally, this is more important in sectors where endpoint products require many different components to function, Shapiro mentions the ICT sector, but also considers vertically integrated companies such as (pre-merger) Dow and DuPont, whose *ability* to innovate is high.⁴² Synergies can be achieved as a positive effect of a merger, such as in the TomTom/TeleAtlas case.

These three principles do not render the relationships between market structure, firm size and innovation any less complex, but my view is that Shapiro's work offers a good way to encapsulate both leading theories in a manner well suited to exemplify and overview. It has the benefit of not being as categorical as either of its preceding works, while offering a framework that can be applied to a more varied set of cases. This follows of course from its original design goal, to assist in the assessment of mergers.

2.3 A short overview of Innovation

Although the theorists described above all use their own interpretation of the word, it is similar enough to be easily understood as the same criterion.

This section sets forward a simplified view on the different concepts of innovation as provided in the Commission's policy brief on innovation in merger control.⁴³ It will then serve as the ruling definition for these concepts throughout this essay. As mentioned earlier, disruptive innovation will be further examined below.

Firstly, the concepts of product and process innovation needs to be separated. Product innovation means the introduction of new or significantly improved products, while process innovation refers to new or significantly improved operations, for example in management or manufacturing. Toyota's original Lean model of production is an example of process innovation, allowing them to increase quality at lower costs of quality assurance.

The second distinction concerns the level of technological change, with incremental innovation marking smaller steps and a breakthrough innovation denoting significant technological change. Adding a feature to an existing product, such as slow motion to a VCR, is an example of incremental innovation. Breakthrough innovation would instead be characterized as the jump from VHS to DVD, or from DVD to Blu-Ray. It refers to the improvement or change of what is considered "State-of-the-Art".

⁴¹ Shapiro, page 365

⁴² Ibid, page 365

⁴³ EC Competition policy brief on merger control and innovation.

Finally, a distinction is made between sustaining innovation, which takes place within the value network of established firms and gives customers a somewhat linear improvement. Disruptive innovation, on the other hand, occurs outside the value network and produces something with other characteristics than existing products.

2.3.1 Disruptive Innovation

The following section aims to describe disruptive innovation, and how it is different. Disruptive innovation as a concept will come into play mainly in the second part of the essay, dealing with start-up acquisitions. As will be shown further below, the start-up business model lends itself well to disruptive innovation on digital markets and it is my view that this section will help to provide some background as to why, aside from providing differentiation among the concepts discussed in both parts of the paper.

2.3.1.1 Background

The distinction between *sustaining* and *disruptive* innovation was first made in an article in the Harvard Business Review, “*Disruptive Technologies: Catching the Wave*”, written in 1995 by Bower and Christensen.⁴⁴ Christensen would then go on to write a book, *The Innovator’s Dilemma*,⁴⁵ building on the concepts established in the earlier article and dealing with the “dilemma” of companies investing heavily into sustaining innovation still losing their incumbent status to disruptive innovators. Both of these works will be referenced alongside the article *Disruptive Innovation and Competition Policy Enforcement*, written by de Streel and Larouche.⁴⁶ The latter article combines business perspective with that of competition enforcement, which will both be utilized here as well as in the second part of the paper.

2.3.1.2 Disruptive and Sustaining Innovation

As mentioned in the earlier overview, incremental and breakthrough innovation refers to the technological process, denoting the rate of technological change.

Disruptive and sustaining innovation are instead defined in relation to the value network surrounding it. Sustaining innovation takes place within an existing value network, while a disruptive innovation comes from outside the value network and displaces it. In *The Innovator’s Dilemma*, Christensen explains that incumbent firms within a value network tend to improve products constantly,

⁴⁴ Bower & Christensen, pages 43-53.

⁴⁵ *The Innovator’s Dilemma*.

⁴⁶ De Streel & Larouche.

pulling the market upwards towards the high-end. This means that companies from outside the market can enter it with lower grade products, with an additional offering of value from outside of the value network. If they are successful at establishing themselves at the low-end, they can redefine the value network on their terms.⁴⁷ This will lead to the supplanting of leading firms. In this way, even successful firms that invest in (sustaining) innovation can be blindsided and displaced by disruptive innovation.

De Strel and Larouche offers an example, also involving video playback:⁴⁸ The introduction of the VCR, its replacement by the DVD and finally the Blu-Ray are all part of a chain of sustaining innovation, through which domestic video storage and viewing units have increased in sophistication. Their resolutions of both sound and video have increased, they are easier to use, and storage space has increased. Alongside the development of Blu-Ray and DVD, internet streaming technology was taking shape. Streaming sites such as YouTube catered to the needs of the lower ends of the market, while offering additional values. Most prominently, streaming does not require a physical unit specifically designed for video playback and can be accessed on any device with compatible specifications. In YouTube's case, a PC with an internet connection and a browser, for instance. Companies engaged in the manufacture of DVDs and Blu-Rays, despite the quality of their products, could not counter their loss of market power to streaming services. As the quality of streaming services increased, its substitutability for consumers increased, leading to a shift in the value network towards streaming and away from physical media systems.

Christensen explains the development of disruptive innovation, and why its potential is typically hidden to incumbents, as two stages. In the first stage, the innovation performs worse in some metrics important to traditional customers⁴⁹ and with a lower price-point. Continuing the example, YouTube was, and is, offered free of charge altogether. This leads to it targeting new consumers in a new market, leading it into the second phase. The second phase occurs when a disruptive innovation has established itself in this new market. From this position, it quickly progresses to the point where it also satisfies mainstream consumers, dethroning the leading firms in the mainstream market. This is very hard for incumbents to detect, with disruptive innovation often being able to strike from under the radar of any traditional business defense strategy.

Welfare implications of disruptive innovation are generally positive. It can, and does tend to, enable Schumpeterian “creative destruction” as described above, which is generally agreed to be good for welfare.⁵⁰

⁴⁷ Through the offer of value from outside the network.

⁴⁸ De Strel & Larouche, page 3.

⁴⁹ And any customer survey conducted by the incumbent is likely to reflect that.

⁵⁰ De Strel & Larouche, page. 4.

2.4 Summary

The aim of this chapter was to establish a basic understanding of the economic theories used in this paper, as well as the terminology. The section on disruptive innovation will serve as background to the second part of the essay, dealing with innovation arising from start-ups and potential implications for antitrust enforcement.

3 Innovation considerations within the current merger control framework

3.1 Introduction

The aim of this chapter is to provide an overview of the European Commission's stances on innovation as a criterion for merger assessment. It will be divided into two sections, with the first handling horizontal and the second non-horizontal mergers. Each section will begin with an overview of applicable paragraphs in the respective Guidelines, before moving on to summaries of relevant case law, excluding Dow/DuPont, which has its own separate chapter.

Both sections primarily concern sustaining innovation, made clear in both the wording of the guidelines and the reasoning found within the cases.

3.2 Horizontal Mergers

A horizontal merger is defined as one that occurs between undertakings operating at the same level of the economy.⁵¹ Typical competition concerns include the accumulation of market power by firms, which in turn could be exploited to the detriment of consumers and protected by (unilateral or non-coordinated) anti-competitive effects.⁵² It could also lead to an increase in concentration on a particular industry level, enabling the merging parties to raise prices and restrict output,⁵³ enabled by explicit or tacit coordination of behaviour with other firms (coordinated effects).⁵⁴

Examples of innovation considerations will be shown below but are generally similar in primary outlook. The Guidelines has some specific points specifically about innovation, such as the protection of pipeline products, aside from setting it as a value to be protected under the merger regime.

⁵¹ Jones and Sufrin, page 1088.

⁵² Ibid.

⁵³ Or reduce quality; authors note.

⁵⁴ Jones and Sufrin, page 1088.

3.2.1 Horizontal Merger Guidelines (HMG)⁵⁵

The horizontal guidelines fundamentally places the harm caused by a reduction in innovation at the same level as the more traditional parameters of price, choice and quality.⁵⁶ It is stated that the primary aim of the EU merger control regime is to prevent mergers that would deprive customers of any of these benefits. This means that innovation concerns can be the focal point of a merger investigation, and in the end decide it.

The HMG further specifically states that in markets where innovation is an “important competitive force”, mergers may increase incentive to bring new innovations to the market and, thereby, the competitive pressure on rivals to innovate themselves. If two important innovators merged, however, it may instead significantly impede competition.⁵⁷ The example given is a merger between two companies with important “pipeline” products related to a specific product market, but this is not exhaustive. Within this framework, even a smaller firm could still be considered an important competitive force, if it has promising pipeline products⁵⁸

Paragraph 20 (b) of the HMG also establishes innovation as one of the special circumstances which the presumptions of non-harmful effects of a merger with a low post-merger HHI. Specifically, it points to one of the parties being an important innovator.

Further, it is pointed out in paragraph 37 that a firm may exert higher competitive constraints than its size would suggest. In an already concentrated market, the acquisition of such a firm may drastically change the competitive landscape, beyond what would have otherwise been expected.

It is also important to note that the continuing references to “increased prices” throughout the HMG are not only used to designate price effects, but is also intended to catch other effects, such as innovation.⁵⁹

3.2.1.1 Potential competition

⁵⁵ Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings.

⁵⁶ *Ibid*, para 8.

⁵⁷ *Ibid*, para 38.

⁵⁸ *Ibid*.

⁵⁹ *Ibid*, para 8.

The HMG acknowledges that a merger with a potential competitor can have similar effects to a merger involving firms already active on the same market.⁶⁰ The potential competitor could already be constraining firms active in the market, for example if it controls assets that could be used to gain entrance to the market without significant sunk costs or if the potential competitor would be likely to enter the market *in a relatively short time*. This market entry had to constrain the behavior of active firms quickly in order to be considered.⁶¹ For a merger with a potential competitor not already exercising competitive constraint to be anti-competitive, there has to be a *significant likelihood* that it would grow into an effective competitive force.⁶² Indications that a company has an intention to enter the market could serve as evidence of this. In examining whether an entry is likely, the HMG states that an appropriate timeline depends on the characteristics and dynamics of the market, as well as the capabilities of the potential entrant, but entry is usually only considered to be *in a relatively short time* if it happens within two years.⁶³

3.2.2 Horizontal cases

3.2.2.1 Medtronic/Covidien

In the Medtronic/Covidien merger,⁶⁴ the market leader for medical devices used to treat vascular diseases, Medtronic, sought to acquire Covidien, active on the same market. Covidien had been developing a new type of drug-coated balloon called Stellarex. Considering the positive clinical trial results of Stellarex, the Commission considered that Covidien could have exercised a competitive constraint on Medtronic, following the release of Stellarex. There were few competitors active on the market and none of them were a significant competitor to Medtronic. By eliminating this possible competitor, the transaction would likely have reduced innovation competition. The merger was cleared on the condition that Stellarex and the assets necessary for its completion were divested.

Comment: This is a case where a pipeline product in development led to the conclusion that the firm would have ended up a credible competitor. It serves to illustrate the importance placed on innovation when other factors would not have been sufficiently indicative of possible harm to competition. By recognizing an innovative product capable of market entry, the Commission's

⁶⁰ HMG, para 58.

⁶¹ Ibid, para 59.

⁶² Ibid, para 60.

⁶³ Ibid, para 74.

⁶⁴ Medtronic/Covidien; Approved in 2014.

decision could, in the longer run, lead to a market that is more contestable than before.

3.2.2.2 Novartis/GlaxoSmithKline's oncology business

The pharmaceutical company Novartis was developing both late stage (phase III clinical trials) and earlier stage (Phases I and II) pipelines in connection with two drugs, considered innovative by the Commission. The drugs showed good progress in the treatment of skin- and ovarian cancer in the later stages of trial, but also demonstrated promise in the treatment of several other types of cancer for which the earlier stages of clinical trials were ongoing. Novartis planned to acquire GlaxoSmithKline's oncology business, which would mean the acquisition of drugs using the same mechanism of action as the ones they themselves already had in development.⁶⁵ This would mean that Novartis would be running clinical programs in parallel, which would have been expensive and likely resulting in cannibalization.

In its decision, the Commission considered the use of this drug in the treatments of other forms of cancer (still early in development), as well as the possibility of a duopoly for the treatments which were in phase III.

The Commission considered it likely that Novartis would have ended early clinical trials for the drugs in question. As a result of this, the merger was approved on the conditions that one of the drugs was divested and the other returned to its licensor.

Comment: In my view, this case is important because it illustrates, in a reasonably easily aggregated format, just how minimal a success rate for potential innovation to which the Commission can attach a potential harm to innovation competition. Pharmaceutical development is quite standardized, especially in contrast with the agrochemical R&D processes illustrated in Dow/DuPont below, and could serve to indicate this minimum. I will illustrate this below.

In its development cycle, a pharmaceutical compound or treatment has varying degrees of so-called "Probability of Success", or POS. Recently, a very large biostatistical study was conducted on the POS of pharmaceuticals.⁶⁶ In it, trial data from different phases from the start of development to final approval was utilized to provide data on POS not only from early development to approval, but also the probability of transitioning trial phases. It also has the distinct bonus for my purposes of providing data per therapeutic group, including

⁶⁵ COMP/ M.7275: Novartis/GlaxoSmithKline's oncology business, Commission decision of 28 January 2015; See also: Protecting the drugs of tomorrow: competition and innovation in healthcare, Competition merger brief, Issue 2/2015, paras 1-4.

⁶⁶ Wong et al.

oncology, as well as separate factoring in of testing for multiple indications, as in the case above.⁶⁷

The overall success rate of all development programs is approximately 15%, rounded up.⁶⁸ This is presented in the study as the probability of a phase I therapy receiving final approval.⁶⁹ Further, the POS of phase II drugs is estimated between 25-35%, compared to the 60-70% of phase III.⁷⁰ The picture becomes clearer when factoring in the lower success rates for oncological treatments, with the overall success rate dropping to under 5% without lead indicators, and to around 11% with them. In fact, the success rate of oncological treatments is lower than all other treatment areas, with the overall success rate rising to above 20% without oncology.⁷¹ A similar effect can be observed, naturally, in phase transitions.

It is my opinion that, theoretically, the percentages described above somewhat accurately describes just how nascent an innovation the Commission is willing to investigate and by extension protect.

3.2.2.3 Johnson & Johnson/ACTELION⁷²

The innovation considerations in this case mainly concerned treatments for insomnia. Two drugs were under development at phase II, both using a novel mechanism of action. No other treatments of this kind were currently marketed in the EEA and only a few were under development. If one of these development programs were to be shut down, the impact on innovation competition would have sunk to a level unacceptable to the Commission. In similarity to the case above, the Commission found it likely that one of the R&D processes would in fact be terminated or delayed post-merger. What separates this case from Novartis/GSK was the lower amount of control exerted by the acquirer, J&J, on the development processes of both compounds. One of them was being developed by J&J in cooperation with another company, Minerva, who would receive the rights to market the drug in the EEA if development succeeded. The other was being developed by Actelion, with development planned to continue post-merger by Idorsia, the demerged R&D wing of Actelion, with J&J holding a 16% stake. The Commission nevertheless ended up remedying the transaction as if the control had been total, with the commitments in effect cutting off J&J from the development processes of both drugs.

⁶⁷ Ibid, section 4.1.

⁶⁸ Wong, et al., section 4.1. The actual number is 13.8 %.

⁶⁹ Ibid, table 1.

⁷⁰ Ibid.

⁷¹ Ibid, table 2

⁷² COMP/ M.8401: J&J/Actelion, Commission decision of 9 June 2017.

Comment: The similarities to Novartis/GSK are quite obvious. Both concern potential innovation competition resulting from products early in the pipeline, with a probability of success of under half.

More essentially, in my view, is that it signifies that the Commission is ready to consider overlap in research pipelines as if they were 100% owned. This further indicates the increasing importance placed by the Commission on protecting innovative pipeline products and their benefit to consumers.

3.2.2.4 Pfizer/Hospira⁷³

In the Pfizer/Hospira case, one of the Commission's concerns related to a specific biosimilar drug for treating autoimmune diseases. As opposed to generics, which are straight copies, biosimilars aim for clinical *equivalence* with original pharmaceutical products. This is due to the inherent complexity of biological drugs, making straight copies almost impossible. Because of this, the Commission consider them open to other realms of competition than price. Since biological drugs are usually expensive, more biosimilars on the market could be expected to lower overall prices and increase access to medicine.

The South Korean company Celltrion had developed the only infliximab biosimilar on the market at the time of the merger. It was co-marketed independently and by competing brands by Hospira and Celltrion. Pfizer and Samsung Bioepis were both at an advanced stage of development of competing biosimilars.

Following the acquisition of Hospira by Pfizer, the Commission considered one of two scenarios likely to follow. In the first post-merger scenario, Pfizer would discontinue or delay its development of its own product to focus instead on Hospira's product. This would lead to the loss of future competition and the loss of one of only three differentiated products. In the second, Pfizer would have returned Hospira's products to Celltrion, instead impacting competition between them. The remedies for this case, similar to the ones above, included the divestment of Pfizer's pipeline biosimilar.

Comment: This is a case representative of both potential innovation competition and market concentration as an innovation inhibitor. Again, the Commission chose to ward against discontinuing development by making sure the product in question was divested and the possible competitive constraint exerted by it could be preserved.

3.2.2.5 General Electric/Alstom⁷⁴

⁷³ COMP/ M.7559: Pfizer/Hospira, Commission decision of 4 August 2015.

⁷⁴ COMP/ M.7278: General Electric/Alstom (Thermal Power/Renewable Power & Grid Business), Commission decision of 8 September 2015.

General Electric, active on the market for electric gas turbines, acquired Alstom in 2015. The Commission's investigation found that the barriers to entry in this sector were high, making new competitive entrants unlikely. Alstom was one of only four companies capable of competing at this market level; they were also highly technologically advanced, with their products allowing for increased operational flexibility. This operational flexibility was important to European customers who, due to the large share of renewable energy in the EU energy markets, needed to vary output from their gas turbines. Alstom's technology was uniquely effective in this regard. As such, the Commission found that the removal of Alstom would lead to a decrease in competitive pressure from an innovation and development standpoint, lowering their incentives to invest in innovation. Furthermore, General Electric was likely to withdraw some of Alstom's products from the market, discontinue production on pipeline products and close the innovation pools developed by them. Apart from consumers losing the benefit of newer and improved products, the withdrawal of existing products would have affected future upgrades of turbines already installed. Determinant of continuous upgrades, they could have long life cycles.

Remedies include a divestment of products and pipelines threatened by discontinuation, including a large share of Alstom's servicing agreements. The servicing agreements were to serve as incentives for the purchaser to keep improving the divested product lines. Two production facilities as well as a significant number of Alstom's research and development personnel were also divested.

Comment: Here, the Commission sought to protect the benefits afforded to consumers by innovative products in a direct way, in addition to noting contestability concerns due to loss of competitive constraints. The commitments were designed in a way to keep Alstom's specific product lines operating, as well as to provide another firm with the ability to exercise a similar competitive constraint on the merged entity. This shows how the Commission can preempt product rationalisations before mergers, in order to preserve the values those product lines provide to consumers.

3.2.2.6 Deutsche Börse AG v European Commission

In 2015, the GC issued its judgment in *Deutsche Börse AG v European Commission*⁷⁵. The Commission had issued a decision stopping the merger, partly because the merged entity would have reduced incentives to innovate, thus reducing innovation available to consumers.⁷⁶ The Commission considered that the merger would have led to a near monopoly on the trading of European Finan-

⁷⁵ *Deutsche Börse AG v European Commission*, T-175/12 [2015].

⁷⁶ COMP/ M.6166 – *Deutsche Börse/NYSE Euronext*, Commission decision of 1 February 2012, section 11.2.1.3.4.

cial derivatives on exchanges. These higher concentration level would have been likely to lead to higher prices and reduced innovation. More specifically, the Commission's investigation found that innovation competition in technology, process and organization was based on the need to maintain their position in the face of the opposition. By removing its opposition, the company would no longer have the need to innovate to stay relevant.

The court ruled in favor of the Commission. It should also be noted that the evidentiary requirements set by the GC only called for the Commission to establish a SIEC by showing a reduction in competitive constraint.

Comment: This is an excellent example of the issues brought about by concentration on innovation competition. Arguing in a manner similar to Shapiro, where higher concentration tends to lead to lower contestability and lower innovation incentives. The case showed that the Commission considered innovation activity to be directly related to the preservation of a market position, line of reasoning which was accepted by the GC.

3.3 Non-Horizontal Mergers

Non-Horizontal mergers traditionally encompass vertical and conglomerate mergers.

A vertical merger is one concluded between two firms at different levels of production in the economy.⁷⁷ They are frequently conducted in order to internalise supply and distribution, or to increase efficiency. One of the main ways in which a vertical merger could raise competitive concerns is through foreclosure. A merger between a manufacturer and a supplier of an essential component could mean that the merged party in turn decide to deny this component to a competitor, foreclosing their access.⁷⁸

Conglomerate mergers have no appreciable horizontal or vertical effect.⁷⁹ A conglomerate merger is instead the acquisition of a firm in a field deemed unrelated to the acquirer. This could be motivated by, for example, risk mitigation and diversification. They do not usually result in competitive concerns, but there are some situations in which investigation is deemed justified.⁸⁰ The most prominent example is tying and bundling, where a company uses its market power in a neighbouring segment to foreclose competitors. It is more common in markets that are more closely related.

⁷⁷ Jones and Sufrin p 1088

⁷⁸ Ibid.

⁷⁹ Ibid. p. 1089

⁸⁰ Ibid.

3.3.1 Non-Horizontal Merger Guidelines⁸¹

The NHMG are similar to the HMG in its proposed assessment of innovation effects of a merger. It also acknowledges innovation as an effect to be investigated in merger control.⁸² Further, they state that mergers involving innovative companies likely to expand significantly should also be extensively investigated, even when the post-merger market share is calculated to be less than 30%.⁸³

3.3.2 Non-Horizontal Cases

3.3.2.1 Intel/McAfee

The computer hardware manufacturer, Intel, specializing in central processing units (CPUs) and chipsets, sought to acquire the software security company McAfee in 2010.⁸⁴ Intel was considered dominant, with a market share of about 70%. The transaction would have given the merged entity a competitive advantage over other endpoint security companies. Synergies between Intel and McAfee would have enabled the development of directly integrated security solutions within the microprocessor. McAfee's rivals would not have been able to achieve the same results, thus placing them at a relative disadvantage. In the short term, McAfee's competitors showed concern that the merger would lead to lower prices for endpoint consumers, both because of the increased competitive pressure and the launching of a superior, integrated product.⁸⁵ The market for endpoint security was unconcentrated, as opposed to the market for microprocessors, and was characterized by rapid innovation.⁸⁶

There was limited evidence of intent and incentive to foreclose, but the Commission instead focused on innovation post-merger. It was believed that the competitive advantage gained by the merged entity, while in itself innovative, would have led to the exit of several competitors from the market as well as a decrease in profits among the rest. This decrease in profits was tied to predicted decrease in research and development. Thus, the Commission sought to level the playing field between the merged entity at its rivals, considering the market structure *ex ante* overall better for innovation, even without foreclosure. The remedies were designed to ensure that McAfee would not be able to ex-

⁸¹ Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings.

⁸² NHMG, para 10.

⁸³ *Ibid*, para 26.

⁸⁴ COMP/ M.5984 – Intel/McAfee, Commission decision of 26 January 2011

⁸⁵ *Ibid*, paras 167 and 214-215.

⁸⁶ *Ibid*, paras 109-112.

exploit its new advantage; the competitors were granted access to all necessary technical information from Intel in order to be able to manufacture integrated solutions of their own. Intel was not to impede competitors in their endeavors to do so. The Commission considers the innovation benefits of the merger preserved with these commitments, while still allowing for the development of integrated Security Solutions for microprocessors.

Comment: The Commission seems to have sided with the competitors, citing their concerns of lower prices and reduced profits because of future improved products as an indication of reduced innovation ability. This seems almost like market manipulation instead of competitive constraint manipulation. The merged entity would have launched a superior product and without evidence of foreclosure, it seems counterproductive to, in effect, discourage similar operations in the future. This merger was cleared by the FTC, who also found no evidence of foreclosure. While the Commission could be right in that the pre-merger market structure was better for overall innovation, I believe that the opposite could also be true. The launch of a superior innovative product could have led instead to an intensification of innovation, following the rivals' need to "catch up" in other ways. In my view, this merger can not only serve as an example of the Commission stepping in to preserve market conditions, but also as an example of when a merger could have, theoretically, led to an innovation. It is also an example of a merger achieving the synergy described by Shapiro, which should enhance their ability to innovate. This does not change with the Commission's decision though, with the decision providing all competitors access to similar synergy effects.

3.3.2.2 ARM/GIESECKE & DEVRIENT/GEMALTO JV

In the ARM case, the Commission's analysis considered ARM to be in a very strong position in the upstream market supplying IP architecture for application processors used in consumer Electronic Devices and especially in smartphones and tablets.⁸⁷ They intended to launch a joint venture⁸⁸ to develop as well as market hardware-based security enhancements, meant to increase security of applications using sensitive data. So called "trusted execution environments". ARM's processor architecture includes a secure hardware extension, TrustZone, which was also utilized and relied upon by a competing third party. Because of the joint venture, the Commission concluded that ARM would have an interest in decreasing the interoperability between its architecture and solutions competing with the new joint venture, either by withholding information

⁸⁷ Case COMP/ M.6564 – ARM/GIESECKE & DEVRIENT/GEMALTO JV, Commission decision of 6 November 2012

⁸⁸ With companies Gemalto and Giesecke & Devirent.

necessary for competing designs to function or by modifying the design of TrustZone.

Similar to the intel/McAfee case, remedial commitments focused on the providing of information. In this case, from ARM to the joint venture's competitors on current and future versions of TrustZone and any other future equivalent architecture, on the same conditions as ARM provides it to the other members of the joint venture. In addition, they were not to design their upcoming products in a way that would intentionally degrade competing TEE performance.

Comment: This case serves to exemplify vertical foreclosure concerns as they relate to product development.

3.3.2.3 Telefonica/Vodafone/Everything Everywhere Joint Venture

In the Telefonica UK/Vodafone UK/Everything Everywhere Joint Venture case, three (of four total) operators wanted to create a joint venture for a secure mobile payment system in the UK.⁸⁹ The Commission's concerns were mainly focused on the collective position of strength enjoyed by the members of the joint venture. It was believed, pre-investigation, that they could have ability and incentive to block potential entrants, most notably by foreclosing access to SIM-cards.⁹⁰ The Commission cleared the merger in phase II without conditions, ruling out these concerns. There were several alternative offerings available and it was found that the JV would have neither the technical nor the commercial ability to foreclose.

Comment: This is also an example of foreclosure concerns related to product development, with the difference that it concerned the potential blocking of entrants.

3.4 Efficiencies

In the merger regulation, it is stated that any positive effects, in the form of substantiated and likely efficiencies should be taken into account during the investigation.⁹¹ Efficiencies created by the concentration could counteract effects of competition, particularly potential harm to consumers resulting from

⁸⁹ COMP/ M.6314 – Telefónica UK/Vodafone UK/Everything Everywhere JV, Commission decision of 4 September 2012

⁹⁰ Where sensitive data could be stored (somewhat) securely, called hard encryption, as opposed to the software and application based "soft" encryption.

⁹¹ EUMR, recital 29.

the operation. As a consequence, this could mean another outcome to the SIEC test.

The HMG considers efficiency gains in R&D and innovation, thus acknowledging pulse of innovation effects as a possible efficiency gain.⁹² Innovation considerations are not exempt from the rules applied to other types of efficiencies, and it must be demonstrated that they will be passed on to consumers, verifiable and merger specific. Theoretically, this may outweigh a horizontal merger's anti-competitive effects.

The NHMG submits that vertical and conglomerate mergers provide a substantial scope for efficiencies.⁹³ This is in part because vertical and some conglomerate mergers usually feature complementary companies. By integrating them and their associated products and activities into a single unit, you could theoretically produce a significant gain in pro competitive efficiency. The example given (and one of the more common scenarios), is a decrease in markups on the downstream market being likely to increase upstream demand. Reaping the benefits of increased demand, vertically integrated firms would have increased incentives to decrease prices and increase output. This is because the integrated firm would be able to seize a larger part of the benefits.⁹⁴ With integrated firms taking effects on downstream and upstream markets into account, investing in one level could provide even greater rewards. "Stepping up innovation" is one such example.

Another, practical, example is the TomTom/TeleAtlas case.⁹⁵ TomTom, a manufacturer of personal (or portable) navigation devices (PNDs) sought to acquire Tele Atlas, one of two producers of digital maps⁹⁶ used in such devices. Main concerns included foreclosure, because of the duopoly status on the market for digital maps and TomTom's strong market position downstream. The Commission's investigation dismissed such concerns, considering that the presence of an upstream competitor, Navteq, would limit the merged entity's ability to restrict the access of downstream competitors. The loss of sales of digital maps would also not be compensated by increased sales of PNDs. TomTom/Tele Atlas was notable for the assessment of efficiency gains, primarily because of the aforementioned internalization of double mark-ups through the integration of previously independent price setting. Not entirely insignificantly, however, innovation efficiencies were one of the rationales of the merger; the merging parties had claimed that producing "better maps – faster" was one of the main stated reasons for the merger. The parties cited the integration of TomTom's user data to improve Tele Atlas map databases, with

⁹² HMG, para 81

⁹³ NHMG, para 13

⁹⁴ Referred to as the "internalization of double mark-ups"

⁹⁵ COMP/M.4854, TomTom/TeleAtlas, Commission decision of 14 May 2008. Note the discussion on market definition in regard to the rapidly increasing importance of the usage of mobile phones in lieu of PNDs, for example para 71.

⁹⁶ Covering Europe and North America.

TomTom's large customer base providing a significant amount of feedback. Although the Commission considered that consumers would benefit from more frequent and comprehensive database updates, these efficiencies were found to be difficult to quantify, with estimates provided by parties unreliable. The efficiencies were found to be merger specific, however. The Commission stated that both parties were unlikely to contractually pursue investments of the same magnitude as they would if integrated, as such investments would be risky to a non-integrated company. It was concluded the proposed merger was likely to receive the goal of producing "better maps – faster". Ultimately, it was found not necessary to estimate the magnitude of these likely efficiencies because of the overall lack of anti-competitive effects, allowing the merger to be cleared.

4 Dow/DuPont

4.1 Background

Agricultural chemicals (Agrochemicals) is, a chemical used in agricultural production, such as fertilizers (synthetic or concentrated), accelerated growth nutrients and, most notably, for the protection of crops. The developments in agriculture with the course of history has had a profound impact on the development of human civilization for thousands of years. Improvements such as crop rotation, the implementation of different crop types⁹⁷ and in later years mechanization⁹⁸, pesticides and the development of synthetic fertilizers has allowed for significant jumps in sustainable population. Food supply is, and has been, critical for the development and stability of modern civilization. Although industrialized and biotechnical agriculture has played a significant role in the increase of global crop yields, their development and proliferation has not been entirely unproblematic.

The continuing development of agro-chemical products still serves to improve the global crop yields, and the crop protection industry still plays an important role in maintaining the sustainability of food production for a growing world population.⁹⁹ Innovation holds the promise not only improving quality, increasing availability and decreasing the price of food, but also in reducing the aforementioned environmental impact through the increasing demands placed on crop protection.¹⁰⁰ Crop protection products also need to be continually developed to counter resistances developed by pests, through their own form of innovative activity.¹⁰¹

⁹⁷ For example, through The Columbian Exchange, which saw crops such as corn and potatoes to the old world and crops such as wheat and barley to the new.

⁹⁸ Tractors, compound harvesters and other machinery, significantly lowering manpower demands.

⁹⁹ Dow/DuPont para 1976.

¹⁰⁰ Ibid, para 1977.

¹⁰¹ Ibid, para 1976.

4.2 Market Features

The paper “Agro-Chemical mega-mergers and Innovation – Between Competition Law Regulation and IP Rights” by Ioannis Lianos offers an introduction to some features of the sector, as well as providing an analysis of the case which will be utilized further below. This will serve as a further introduction to the case.

In the paper, different ways in which innovation in this specific industry may be appropriated is presented. Plant variety protection, which has its base in the TRIPS-agreement, which stipulates at least *sui generis* protection for plants.¹⁰² More concretely, the UPOV¹⁰³ Convention was adopted and also offered safeguards for farmers and plant breeders, for example giving farmers the right to save seed for different planting seasons and for breeders to use different varieties in their own research. Plant variety protection bestows “patent-like” protection to plant breeders, by *sui generis* IPRs for the specific genetic makeup of a plant variety, if the criteria for protection are fulfilled: Novelty, distinctness, uniformity and stability. The rights are conferred without having to prove specific steps or utility, as only genetic value of the variety is the basis for protection. The previously mentioned rights for farmers and other breeders are exemptions to these protections, however these are highly conditional, becoming more and more similar to patents in general.¹⁰⁴ Protection for plant variety is commonly protected not only through plant variety protection, but also through utility patents and plant patents. In the EU, plant variety is protected through the Community Plant Variety Rights regime pursuant to Regulation 2100/94, functioning similarly to the general rules specified above, except that any variety must be designated according to article 63 of the Regulation.

Article 53(b) of the European Patent Convention excludes plant varieties and “essential biological processes” from patentability, however this has been interpreted narrowly by the EPO¹⁰⁵. Stating that a single plant variety cannot be patented, but that it could be granted if several varieties fall within the claim. In addition: EU legislation, the biotechnology directive¹⁰⁶, provides the possibility to patent “when the technical feasibility [...] is not confined to a specific plant variety”. The recent “Broccoli” and “Tomato”¹⁰⁷ cases further limited the

¹⁰² *Agreement on Trade-Related Aspects of Intellectual Property Rights*.

¹⁰³ International Union for the Protection of New Varieties of Plants, first adopted in 1961.

¹⁰⁴ Especially since the passing of the 1991 UPOV Convention; International Convention of the Protection of New Varieties of Plants, Ger.-Neth.-U.K., Dec. 2, 1961, 815 U.N.T.S. 89 (revised Nov. 10, 1972, Oct. 23, 1978 and Mar. 19, 1991)

¹⁰⁵ European Patent office.

¹⁰⁶ Directive 98/44/EC of the European Parliament and of the Council of 6 July 1998 on the legal protection of biotechnological inventions, OJ 1998 L 213/13

¹⁰⁷ Appeal number T 0083/05 Case G 0002/13, Broccoli II (March 25, 2015, Appeal number T 1242/06 Case G 0002/12, Tomato II (March 25, 2015)

reach of the exclusion in article 53(b), allowing “essentially biological processes for the production of plants or animals” as long as the patentability requirements are satisfied, the claim defines a product or product-by-process and that the patent, as *explicitly* excluded, does not claim protection for a single plant variety. In essence, this extended patent coverage to plants.

In recent years, there has been significant merger activity between the largest agrochemical companies involved in food production. In November 2015, ChemChina merged with Syngenta. In December of the same year the Dow/DuPont merger was announced and in September of 2016, Bayer and Monsanto announced theirs. The activities combined were estimated to be worth a combined \$239 billion, with the consequence of transforming the industry, with the new merged entities and BASF, all of whom are integrated producers and developers of seeds, crop protection and digital agriculture. The effects of this agrochemical merger-wave were hard to assess. They have raised the need for dynamic competition and innovation assessment to take a larger part in the investigative procedure.

4.3 Innovation considerations in general

As mentioned, the recent agrochemical mega-mergers raised several concerns outside of the more usual topics of assessment, owing to the special characteristics of the industry and the mergers themselves.¹⁰⁸ For example, the European Commission seized an opportunity to engage with innovation concerns beyond the usual outlook on product market considerations.¹⁰⁹ “The Big Six” (turning into the “Mighty Four”) were all integrated, possessing R&D capabilities across the agrochemical board, using both conventional methods of breeding crops as well as GMOs. With technological developments such as predictive breeding through genome sequencing for both genetically engineered and conventional seeds, these research segments increasingly overlap and feed into each other. (Put in AAI report statements? If enough space, write a draft and save) The mergers were not just horizontal due to the high level of integration, but also involved vertical and conglomerate concerns.

Innovation is generally hard to define and anyone assessing these mergers had to contend with that. Lianos exemplifies it like this for the case in question:

“Innovation could refer to investment in new technologies, but also on the broader direction of the R&D effort in the industry in the future. Investment in seed saving and seed diversity, rather than standardisation of traits, or in non-agro-chemical pest management approaches constitutes a business

¹⁰⁸ That is not to say that the usual considerations of price and output were ignored.

¹⁰⁹ Such as in Novartis/GSK.

model that farmers may be less likely to choose, if they are forced to take their advice from the same agrochemical giants.”¹¹⁰

As mentioned, the HMG considers innovation effects to be analyzed in EU merger control, especially if one of the merging firms has an innovation capacity not reflected in market shares.¹¹¹ The Non-Horizontal merger guidelines stresses loss of innovation as a concern as well, for both vertical and conglomerate mergers¹¹².

4.4 Dow/DuPont decision¹¹³

The Dow/DuPont case involved two of the largest agrochemical corporations, active as vertically integrated producers of crop protection chemicals.¹¹⁴ The resulting entity was the largest in the industry, before the separation into three separate companies. The market for crop protection was found to be quite consolidated, with only six major vertically integrated companies engaged in discovery and development of new products.

The Commission focused its assessment on four areas of overlap. *Firstly*, the parties were selling already developed products in European markets, which the Commission investigated any non-coordinated effects arising post-merger, particularly as it would create or strengthen a dominant position and could lead to the elimination of important competitive constraints.¹¹⁵ *Secondly*, the parties had several development pipelines with a high launch probability, 80-90%, meaning the non-coordinated effects of potential loss of competition in price on products had to be taken into account as well. *Thirdly*, the Commission investigate the probability of likely cannibalization of projects in earlier stages of development, because of overlapping lines in research for new active ingredients (AIs, not to be confused with Artificial Intelligence)¹¹⁶ where they were found to be in direct competition (Innovation spaces). *Finally*, because of the small number of firms on the global market capable of larger scale R&D, the Commission investigated the possibility of a possible structural reduction of incentive and ability to innovate on the same levels as before the transaction,

¹¹⁰ Page 29.

¹¹¹ HMG paras 8 and 20, Lianos, page 30.

¹¹² NHMG para 10.

¹¹³ COMP/M.7932, Dow/DuPont, 27 March 2017.

¹¹⁴ As well as in other areas, for example seeds and plastics, but the Commissions concerns regarding innovation were mainly focused on crop protection.

¹¹⁵ As per para 24 of the HMG.

¹¹⁶ Dow/Dupont, section 1.2, para 152 and forward for a definition of the term.

leading to a significant loss of innovation competition in the crop protection industry (Industry level).

4.4.1 Innovation competition on the industry level

The Commission considered the threat of reduced innovation competition for pesticides (or crop protection), looking to the ability and incentive to innovate. Here, the Commission widened its outlook on innovation competition to the industry level, as well as examining competition in specific “innovation spaces” in crop protection.¹¹⁷ Focusing on the third and fourth areas of overlap described above. The overlaps at the innovation space level investigated were between the parties’ lines of research, early pipeline products and, in markets where one of the parties is a supplier, early pipeline products that would compete in it. At the industry level, the parties’ global R&D organizations were examined, meaning resources, personnel and other tangible and intangible assets dedicated to research and development.¹¹⁸ The following sections attempts to define these terms.

Lines of research is a term meant to comprise the “set of scientists, patents, assets, equipment and chemical class(es) which are dedicated to a given discovery target whose final output are successive pipeline AIs targeting a given innovation space”.¹¹⁹ Clarifying in the following paragraph that assets and personnel dedicated to a “line of research” can also be dedicated to several lines with the same general target, although the cost of switching lines outside a given target “group”, such as Herbicides, was considered to be highly expensive.¹²⁰ *Early pipeline products* are products which are intermediate results of research lines. They were considered to be selected among possible leads, but were still in the discovery or pre-development stages, most of the costs associated with development had not yet been sunk and the likelihood of success was lower than (conventional) pipeline products, whose chance of successful launch was estimated to 80-90 %.¹²¹ Citing their legal basis to be article 2 of the merger regulation,¹²² clarifying that the (framework and test) is meant to extend to competitive constraints as a whole.¹²³ It is not limited to price effects, confirmed by the courts to encompass a range of factors that can alter competition, in order to

¹¹⁷ Dow/Dupont, para 1957.

¹¹⁸ Ibid.

¹¹⁹ Ibid, para1958.

¹²⁰ Ibid, para 1959.

¹²¹ Compare with above pharmaceutical cases for a good example of “pipeline product”.

¹²² [a] concentration which would significantly impede effective competition, in the common market or in a substantial part of it, in particular as a result of the creation or strengthening of a dominant position, shall be declared incompatible with the common market"

¹²³ Dow/Dupont, para 1988.

establish a significant impediment to effective competition.¹²⁴ As stated above, paragraph 8 of the HMG also sets out clearly that preserving price competition is not the only object. Citing, *inter alia*, innovation concerns as well as identifying that increasing market power could be construed as the ability to reduce innovation and not only to raise prices.¹²⁵

The Commission considered the wording of the EUMR and the HMG to be clear, it would not limit its assessment to price or product competition when assessing a significant impediment to effective competition, it also had to consider innovation effects and diminished competition.¹²⁶ Furthermore, the analytical framework given in the HMG lend support to the Commissions appraisal of innovation effects. The beginning of the section on non-coordinated effects starting with paragraph 24 states that eliminating “important competitive constraints”, would lead to an increase in market power for the firms whose restraints had been loosened, which could be a impede competition as a whole.¹²⁷ The Commission holds that paragraph 24 can also be understood to more broadly be applicable to non-coordinated effects on innovation, meaning a loss in innovation competition could also lead to a reduction in overall competitive constraints.¹²⁸ As stated above, when referencing price effects, the HMG also considers other forms of harm to competition.¹²⁹ Paragraph 38 specifically states innovation as a criterion for the assessment of whether an important competitive force is eliminated, even though efficiencies are considered in this regard, the merger between important innovators could lead to a significant impediment of effective competition.¹³⁰ The example given in this paragraph of companies with important pipeline products merging is only one example of harm to innovation competition¹³¹ The Commission considered the innovation criterion confirmed with the legal basis put forward.

According to the Commission, the market features of the crop protection market make it likely that a merger between innovators is likely to reduce innovation, considering that such rivalry could be a driving force behind it.¹³²

The Commission specifies and summarizes this relationship like this:¹³³

“This is because: (i) individual crop protection product markets are contestable on the basis of innovation; (ii) given the strong Intellectual Property Rights (IPRs) in the crop protection industry, the original innovator can be expected

¹²⁴ 1989, as well as the Tetra Laval and Deutsche Börse AG v. Commission cases, for example.

¹²⁵ HMG para 8 and paras 1990-91 of Dow/Dupont.

¹²⁶ Dow/DuPont, para 1992.

¹²⁷ Ibid, para 1994.

¹²⁸ Ibid, para 1998.

¹²⁹ HMG Para 8 and Dow/DuPont para 1995.

¹³⁰ Dow/Dupont, para 1996.

¹³¹ HMG para 36 and Dow/Dupont para 1997.

¹³² Dow/DuPont, para 2000.

¹³³ Ibid, para 2001.

to reap the benefits from its innovation, by preventing rivals from imitating the successful innovation;¹³⁴ (iii) innovation is mostly based on product innovation; (iv) consolidation between rival innovators is unlikely to be associated with efficiencies ([...]); and (v) the fear of cannibalisation of own existing products is a disincentive to innovate which is likely to be reinforced by a merger between rival innovators.”

4.4.2 Innovation spaces

In addition to noting the high levels of industry concentration, the Commission also took notice at similarly high levels among innovation spaces.¹³⁵ This section is dedicated to evaluating this concept as it appears in Dow/DuPont.

The Commission considered the assessment of innovation competition in spaces separate from both upstream and downstream product markets. An innovation space should not be understood to mean a market, but an input activity for these markets.¹³⁶ R&D efforts are not focused on the entire industry at the same time, neither is it conducted randomly, without targeting specific “spaces” upstream of lucrative (or strategically valuable) product markets.¹³⁷ These are what the Commission considers to be the “innovation spaces”, which were evaluated in addition to innovation on the industry level when innovation competition was assessed.¹³⁸

In this assessment, an identification of companies with the capacity and assets to innovate¹³⁹ at an *industry level* is a necessary first step.¹⁴⁰ With this identification complete, it is easier to determine if increasing concentration¹⁴¹ would lead to a reduction in innovation output. This is what is described in the previous section.

The next step, is the identification and analysis of the aforementioned “innovation spaces”.¹⁴² According to the Commission, “the innovation efforts of R&D capable companies¹⁴³ are targeted based on discovery concepts based on lead pests and lead crops”.¹⁴⁴ Although the innovation targeting priority, as it were, could vary between different crop protection indications by necessity.

¹³⁴ That is, appropriability is high.

¹³⁵ Dow/DuPont, Section 8.6.

¹³⁶ Ibid, para 2161.

¹³⁷ Ibid, para 2162.

¹³⁸ Note the discussion in Dow/DuPont section 8.8.

¹³⁹ “[...]discover and develop new products which, as a result of the R&D effort, can be brought to the market...]”.

¹⁴⁰ Dow/DuPont, para 2163.

¹⁴¹ Taking barriers to entry into account.

¹⁴² Dow/DuPont, para 2164.

¹⁴³ On the crop protection market.

¹⁴⁴ Dow/DuPont, para 2165.

In pesticides, for example, it is more common to target pests while crop types could serve as a more valuable element for herbicides.¹⁴⁵ This is the area in which innovation competition can be said to occur, with reference to specific discovery targets, without being sure of the outcome. While the innovation spaces correspond to specific downstream targets, they are not necessarily identical to the individually defined downstream markets.¹⁴⁶ It is noted that innovation spaces in the crop protection industry are getting smaller and narrower, due to increasing regulatory pressure forcing products to be more selective than previously.¹⁴⁷ It is not always entirely clear from looking at early indicators what specific product will emerge downstream, and the Commission noted, against the views of the parties¹⁴⁸, that the assessment would also need to take place in innovation spaces corresponding to smaller groupings of “crop/pest” combinations.¹⁴⁹

4.4.3 Decision Summary

Based on its assessment, the Commission considered that the merger would lead to a significant reduction of competition and conditioned their approval of the merger on a remedial package, including the divestment of DuPont’s entire R&D organization.

To summarize, the Commission considered that appropriability on the market was high. They also saw contestability as a key driver for innovation competition, with it being the main way to capture sales. Because of this, any reduction in head-to-head or overlapping competition was deemed to result in a reduced incentive to innovate, meaning that some costly R&D programs could be discontinued.¹⁵⁰ The Commission also considered that the merger would result in lower incentives for the parties to innovate as a merged entity than they would have if continuing separately. This effect would be compounded by the fact that only a few companies were active in the entire agro-chemical R&D process. This would result in an overall reduction in innovation, especially in certain niche areas, according to the Commission.

¹⁴⁵ Dow/DuPont, para 2165.

¹⁴⁶ Ibid, para 2168.

¹⁴⁷ Ibid, para 2166. The parties argue (2170) that decisions (particularly regarding discovery) are not made with so narrow targets.

¹⁴⁸ Ibid, para 2171. The parties considered that the Commission should focus on either the relevant product markets or on innovation effects on the industry in general.

¹⁴⁹ Ibid, para 2191.

¹⁵⁰ Ibid, section 8.9.

4.5 Discussion

The Dow/DuPont case seems to indicate a further step in policy from cases such as Novartis/GSK, no longer requiring identifiable research pipelines or products, but instead using the “innovation space” framework to establish potential innovation competition at an earlier stage.

This section aims to present the main points of discussion that arose from the decision, by presenting the views of a few authors who have commented on it, Carles Esteva Mosso, Ioannis Lianos, Nicolas Petit and Jorge Padilla.

4.5.1 Carles Esteva Mosso¹⁵¹

In a speech prepared for the 66th ABA Section of Antitrust Law Spring Meeting, delivered on the 12th of April 2019, Carles Esteva Mosso commented on the Commission’s review of innovation competition cases.

Among other topics, Esteva Mosso discusses the effects of a merger on innovation at earlier stages, when products are not yet clearly defined and chances of success are low. R&D efforts at this stage may target markets or “take place upstream of actual product markets in innovation areas”.¹⁵²

He states that it is common for a firm to re-organise its R&D efforts after a successful merger.¹⁵³ This rationalization process could result in a shift of effort within existing research lines because of the risk of cannibalization of profits. Further, a merger could result in a reduced overall incentive to innovate, negatively impacting their desire to start new research projects. He considers that negative effects on innovation could occur almost right after a merger’s implementation. In the longer term, harm to consumers could materialize through a future loss of product variety, in turn leading to an overall lower level of product competition on markets targeted by research efforts in overlapping fields of R&D.

He goes on to state that innovation would typically be stifled by mergers between close horizontal competitors, where they are both important innovators in an R&D intensive sector.¹⁵⁴ In such a sector, the number of such firms can generally be easily established. Additionally, in a sector where appropriability is already high, a merger would be unlikely to foster innovation through increased appropriability.

¹⁵¹ Then Deputy Director General for Mergers at the Commission’s DG Comp.

¹⁵² Innovation in EU Merger Control, Carles Esteva Mosso. Page 7.

¹⁵³ Ibid.

¹⁵⁴ Ibid.

Esteva Mosso considers that the establishing of a presumption that a horizontal merger would negatively affect innovation would be inappropriate. Instead, he argues the importance of rigorous examination of evidence in proving the effects on innovation in each case. Particularly when concerning the overlap between R&D capabilities and projects, the importance of rival innovator, and the barriers to entry.¹⁵⁵ If specific evidence of discontinuation of R&D efforts is found, it can be used to strengthen the analysis and support the overall theory of harm.¹⁵⁶

Going on to describe the investigation of Dow/DuPont, Esteva Mosso focused specifically on the innovation concerns raised by that merger. To avoid repetition, some areas will be shortened, and others skipped.

Beginning with a general discussion of market features and players, a discussion of the Commission's investigation into R&D overlap and innovation follows.¹⁵⁷ Determining that Dow and DuPont were close competitors required an assessment of overlap, which he describes as determining where the parties "meet" each other during the innovation process, including both earlier and later stages of development. He explains how the overlap was investigated both on a "discovery" level, looking at discovery targets, and the product pipelines of the development stage.¹⁵⁸ This is his description of the central points of the "innovation space".

After this was established, Esteva Mosso goes on to argue that the uncertain outcome of a specific project should not be confused with the overall likelihood of negative effects on innovation.¹⁵⁹ He considers that even if there is uncertainty in the short term, the general incentives to invest in innovation would be blunted if firms with competing innovation projects were to merge. This would result in an overall reduction of successful innovation, which would be detrimental to consumers. Thus, he states, that while innovation efforts may have an uncertain success chance, overall innovation efforts as a competitive concern is motivated.¹⁶⁰

He closes by reiterating that innovation analysis is an important part of the Commission's merger control practice, maintaining that their decisions have not been based upon presumptions on innovation effects.¹⁶¹ The decisions should instead be relying on a meticulous, facts-based analysis. He considered innovation as a key component to be integrated into merger control, in order for the Commission to fulfill both its responsibilities under the EUMR, but also to achieving the objectives of the EU.

¹⁵⁵ Ibid. Page 8

¹⁵⁶ In my view, an example of this could be the evidence of discontinuation found in the GE/Alstom case.

¹⁵⁷ Esteva Mosso. Page 10

¹⁵⁸ Ibid.

¹⁵⁹ Ibid. Page 11

¹⁶⁰ Ibid.

¹⁶¹ Ibid. Page 16

4.5.2 Ioannis Lianos¹⁶²

Lianos considers that the Commission's innovation framework in Dow/DuPont was based on prior assumptions of harm, even if well underbuilt.¹⁶³ He cited paragraph 2001 of the decision, also cited in full above, as an indication of the Commission's prior outlook.¹⁶⁴

The Commission was not able to precisely identify either early pipeline products or lines of research to be discontinued, deferred or re-directed post-merger, but it considered it likely that they would correlate in areas where the parties were close innovation competitors. Following the Commission's analysis on reductions to incentives to innovate, Lianos notes, similarly to Esteva Mosso, that the theory of harm goes beyond the "short-term". The short-term again being the almost immediate discontinuation of overlapping lines of research targeting the same innovation spaces.¹⁶⁵ The assessment also encompasses both a medium and a long term theory of harm, according to Lianos, which stems from the reductions of innovation incentives of the merged entity in comparison to the merging parties separately. He maintains that what is taken into account is the "structural effect of the transaction", resulting in the merged entity lowering its R&D efforts, which ultimately would lead to fewer innovative active ingredients being brought to market.¹⁶⁶

Lianos considers the main take-aways from the agro-chemical cases is that innovation cannot only be evaluated according to its future benefits. The very process should also be taken into account, with new technologies leading to new application technology. He goes on to consider a further theoretical movement forward for innovation competition, suggesting a further look into the *direction* of innovation. He presents an approach in which the objective would not only be to promote innovation competition in the abstract, but to protect competition in quality and competition for more environmentally friendly and sustainable methods of agricultural production. Considering both the objective laid out in article 3 (3) in the TEU to create a "highly competitive *social* market economy" and the mandating of environmental protection regulations into EU policies and activities in article 11 TFEU. In addition, he notes the regulations already in place in the sector, in particular with regards to GMOs, could also speak to the need for the Commission to protect and promote competition that would be compatible with the broader aims of the EU. He does concede that environmental protection is not a traditional goal of competition law, article 111 provides a framework for such an interpretation of the EUMR.

¹⁶² Currently serves as President of the Hellenic Competition Commission.

¹⁶³ Lianos, Section V.

¹⁶⁴ Dow/Dupont para 2001.

¹⁶⁵ Ibid. Para. 3056

¹⁶⁶ Ibid. Para 3057

In the context of Dow/DuPont, Lianos considers that it could be an indicator on future approaches. Noting that the Commission referred to public policy concerns, however no evidence was provided as to how these would be integrated into the competition analysis and article 11 was not used for justification. He adds that it is likely to have been an influence on the Commission's assumptions as to the eventual outcome of the innovation that is protected.

Lianos' views seem to generally place him in agreement with Esteva Mosso, in that the Dow/DuPont decision was a development in line with the objectives set forth for the Commission's merger control regime. In contrast, he considered that the general outlook on the merger was influenced by a prior presumption of harm, although he doesn't disagree with its implementation. While Esteva Mosso seems content, at least in his speech, to conclude that the decision furthers the objectives of the EU, Lianos argues for an even closer integration of the overall goals of the EU treaties into merger control. In this case specifying environmental protection as one of the variables to consider in the analysis.

4.5.3 Nicolas Petit¹⁶⁷

A far more critical voice than those above, Nicolas Petit criticized the Dow/DuPont decision primarily on the basis of legal certainty and burden of persuasion,¹⁶⁸ as laid out in the Tetra Laval case.¹⁶⁹ The "Significant Impediment to Effective Innovation Competition"-test, as he calls it, does not live up to a sufficient evidentiary standard, in his view. In Tetra Laval, a test was formulated to attempt to balance the needs of administrative discretion, as enjoyed by the Commission, and policy accountability. The Court of Justice held that the Commission must demonstrate that, as quoted by Petit:¹⁷⁰

"[T]he evidence relied on is factually accurate, reliable and 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."¹⁷¹

Petit interprets this paragraph to mean that the economic evidence utilized in the assessment of a proposed merger should be accurate, consistent and exhaustive. In my view, Esteva Mosso's speech indicate that he argues that this standard of proof was met by the evidence presented in Dow/DuPont. Petit, on the other hand, believes that the economic evidence was insufficient.

¹⁶⁷ Professor of Law at the University of Liege.

¹⁶⁸ For the expression "Burden of Persuasion" see: Ioannis Lianos & Christos Genakos, *Economic Evidence in EU Competition Law*, pages 64 and 75.

¹⁶⁹ Case C-12/03 Tetra Laval v. Commission.

¹⁷⁰ Petit, page 906.

¹⁷¹ Tetra Laval, para 39.

Continuing, Petit mentions that the courts usually refer to this burden of persuasion by requiring the body of evidence supporting a merger decision to be “sufficiently cogent”.¹⁷² This was referred to as the “plausibility” analysis by James Venit, whose work is quoted by Petit.¹⁷³ In essence, this plausibility analysis boils down to describing that the evidence used must be logical and not internally contradictory.¹⁷⁴ This appears to restrict the assessment of burden of persuasion to the decision in question, with references to previous decision practice not being relevant. This does not mean that the economic theories underpinning the decision would be confined to it, but as stated by Advocate General Wahl, the condition in *Tetra Laval* needs to take into account all available information, and not just information in its possession.¹⁷⁵ In Petits words, the test in *Tetra Laval* refers to all economic evidence in general, and that the tests laid out in *Tetra Laval* and *Impala* are not restricted to economic data, but to all information of an economic nature.¹⁷⁶ The Commission is required to use a model producing similar and direct results and not one that gives differing results depending on starting inputs.¹⁷⁷

Petit goes on to state that this burden of persuasion is not fixed.¹⁷⁸ The more speculative the Theory of Harm, the stricter the requirements placed on the evidence in order to meet the standards of the *Tetra Laval* test. When the effects are more easily anticipated, the evidence required to support a conclusion is instead lowered.¹⁷⁹ Petit hold that the application of a unilateral effects model to non-price parameters, such as innovation, should be supported by this higher standard of proof, as the process is more uncertain.

Petit goes on to mention *Airtours v. Commission*, in which the General Court overturned a Commission prohibition decision based on a coordinated effects theory of harm.¹⁸⁰ Beginning with a factual accuracy test, the GC determined that the Commission’s assessment was based on erroneous predications that demand growth would be limited, all the while ignoring contrary evidence in the form of market trends.¹⁸¹ Continuing, the GC checked the reliability of the reasoning in the decision, holding that the conclusion that post-merger market conditions would result in cautious business strategies from companies

¹⁷² Petit, page 907, quoting from Case C-413/06 (*Impala*), para 50.

¹⁷³ James Venit, *The Scope of EU Judicial Review of Commission Merger Decisions*, in *EUROPEAN COMPETITION LAW ANNUAL 2010: MERGER CONTROL IN EUROPEAN AND GLOBAL PERSPECTIVE* 113, 127 (Philip Lowe & Mel Marquis eds., 2013).

¹⁷⁴ *Impala*, para 162 and 169.

¹⁷⁵ Nils Wahl, *Standard of Review—Comprehensive or Limited?* pages 285 and 291 (Claus-Dieter Ehlermann & Mel Marquis eds., 2011)

¹⁷⁶ Petit, page 907

¹⁷⁷ *Ibid*, page 909.

¹⁷⁸ *Ibid*.

¹⁷⁹ *Ibid*.

¹⁸⁰ Case T-342/99, *Airtours v. Commission*.

¹⁸¹ *Airtours*, paras 123-133. Petit, page 909.

remaining on the market was inconsistent with baseline economic theory.¹⁸² Moving on, the GC established several inconsistencies, most notably that vertical restraints was considered both pro-competitive and anti-competitive.¹⁸³ Finally, the Commission's decision was found to not be exhaustive enough, in not taking smaller players as well as potential constraints exercised by potential entrants into the market.¹⁸⁴

4.5.3.1 The application of the Tetra Laval test to Dow/DuPont

Having presented his views on the Tetra Laval test and its application, Petit goes on to applying it to what Petit refers to as the "SIEIC"-test (Significant Impediment to Effective Innovation Competition) employed and introduced by the Commission in Dow/DuPont. He notes that the Commission used the unilateral effects model, but only to frame their case. Mostly, the Commission's assessment relied on what could primarily be described as qualitative evidence, in regards to the closeness of innovation competition between the parties.¹⁸⁵ Further, there was no indication in the case that the Commission used quantitative evidence in the assessment and development of its innovation theory harm, excluding from it an extensive analysis of innovation diversion ratio and efficiencies. Petit holds that while Annex 4 of the decision holds an examination of economic theory and literature, it appeared that the discussion within it was primarily aimed at lending academic credibility to the Commission's final standpoint. Petit cites the following from Annex 4 to illustrate his point:

"Whilst the results of the papers summarized in the preceding paragraphs do not apply directly to uncertain product innovation, overall these papers indicate that the intensity of competition between rival innovators is positively associated with market-wide innovation, absent specific forms of efficiencies. A merger between two significant and close competitors is therefore likely to reduce the level of innovation by each of the merging parties."¹⁸⁶

Petit holds that the SIEIC model should only be applied if it can fully encompass the innovation drivers within the industry being investigated, in order to comply with the criterion of *accuracy* in the Tetra Laval test.¹⁸⁷ SIEIC, however, currently maintains that rivalry is the main driver of innovation in industry in general. As the Commission held in their decision: "Both the market features of the crop protection industry and documentary evidence suggest that rivalry is a significant factor driving innovation." and "Competition between R&D players

¹⁸² Airtours, paras 134-147, Petit, page 910.

¹⁸³ Ibid, paras 93-108, Petit, page 910

¹⁸⁴ Ibid, paras 208-269, Petit, page 910

¹⁸⁵ Petit, page 910

¹⁸⁶ Dow/DuPont, Annex 4, para 59

¹⁸⁷ Petit, page 911.

at the innovation stage is therefore an important driver of innovation in the crop protection industry.¹⁸⁸ Petit notes that the SIEIC model was not adjusted (to comply with the accuracy standard in Tetra Laval, authors note), but was instead found applicable to the crop protection industry. As he put it, the Commission simply dismissed the complaints of the parties that regulatory pressure and evolving crop resistance would continually drive innovation, even absent rivalry, as “unlikely”.¹⁸⁹ According to Petit, this leaves the possibility for regulatory pressure being a driver for innovation, maintaining high incentives to innovate. The decision does take into account of evolving resistances and regulation are unlikely to impact already released products, it does not comment on future products. By not including such an analysis, the decision’s conclusion that the merger would lead to noticeable reductions in innovation efforts is problematic, in Petit’s view.

He also considers that the Commission’s analysis failed to accurately take into account evidence that other factors than rivalry can affect the innovation process. Petit further notes that the literature on innovation within the agro-chemical sector consider that market and industry competition and structure are not the only drivers of innovation. Even some of the scientists cited by the Commission had maintained that the impact of wider industry, scientific and industry developments on market structure and incentive to innovate is high.¹⁹⁰

Moving on with the application of the *reliability* criterion in the Tetra Laval, the objective of this test is to remove ambiguous, equivocal or controversial economics from the merger review process.¹⁹¹ According to Petit, the application of the SIEIC to the Dow/DuPont paint it as conjecture. Primarily because it equates a post-merger loss in rivalry with lower innovation competition, which is not part of mainstream economic analysis.¹⁹² Referencing the private publications of members of the Chief Economist’s Team, published prior to Dow/DuPont, in which claims were made that the relationship between mergers and innovation always result in a decrease in innovation, he hypothesizes that the publications could be interpreted as to coincide with the publication of the decision, in order to motivate that it is supported by mainstream economics. This is because the claims of a general presumption are not substantiated by other economic research.¹⁹³ Petit believes, that if he is right, caution is to be advised, since merger control review in itself is a bad starting point for the development of economic theory, which seems to be in line with the belief of

¹⁸⁸ Dow/DuPont, note 11 § 8.4.2 and para 2068.

¹⁸⁹ Petit, page 911. Dow/DuPont para 2118.

¹⁹⁰ Petit, page 912.

¹⁹¹ Ibid, page 912.

¹⁹² Ibid, page 913.

¹⁹³ Ibid, page 913.

Esteva Mosso that merger review should rest on, and change in accordance with, established theory.¹⁹⁴

Secondly, Petit claims that the Dow/DuPont decision was not primarily based on economics, which he holds to indicate that the Commission could not yet be fully confident enough to apply the SIEIC in full. Instead, the findings were based to a large degree on redacted internal documents as well as public documents indicating that they would reduce their R&D expenditure post-merger. This is not in itself controversial, but it usually relied upon more heavily where economic theory isn't enough.

Moving on with *consistency*, Petit holds that the Commissions inconsistency shows through on several occasions.¹⁹⁵ First, they seemed to overlook potential benefits to the parties' ability and incentive to innovate through coordinated R&D programs. This would be inconsistent with the finding by the Commission elsewhere in the decision that increased coordination could either increase or decrease innovation. According to Petit, this becomes even more apparent when the main text of the decision is read in the context of Annex 4. Here, the Commission criticized the inverted U-curve model of innovation and competition developed by Aghion et al., which could predict that a merger could lead to increased innovation.

Second, SIEIC predicts a reduction of general R&D inputs, primarily consisting of expenditure.¹⁹⁶ Instead of measuring inputs, Petit notes that the decision instead measures R&D outputs exclusively, which forms the basis of the anticipated reduction in innovate active ingredients. Petit considers this quite the discrepancy between theory and practice, because R&D output is more speculative than inputs. Even if the Commission's assessment of outputs proves to be correct, he maintains that it should be subjected to a higher standard of persuasion.

In regard to the requirement imposed by Tetra Laval on the Commission to consider all information available to assess a complex situation, Petit considered two dimensions of the decision. He defined the *completeness* criterion as demanding the Commission take into account information both for and against its theory of harm. The Commission does cite an article by Dow's Senior Research Scientists several times, but omitted several of his other works. Most notably, work that discusses the drivers of innovation.

Secondly, the completeness criterion requires the Commission to take into account relevant information both inside and outside the decision. The assessment should not only take data provided by the merging parties and third parties. In its decision, Petit shows that the Commission relied upon statistics pro-

¹⁹⁴ Contrast Petit's critical statements above with Esteva Mosso's assurances on page 5 of his speech. He does acknowledge the debate but seems to hold that the formal economic papers released by members of the CET are not primarily meant to support the Commission's decision.

¹⁹⁵ Petit, page 914.

¹⁹⁶ Ibid, page 914.

vided by the U.S Department of Agriculture to support its theory, as it shows a decrease in innovation, while omitting the use of EU industrial data showing other results. He considers both the choice of relying on data from outside the EU and the difference between chosen data inputs as weakening the theory it seeks to support.¹⁹⁷

4.5.3.2 Summary

In short, Petit deemed the application of what he deemed an oversimplified SIEIC to the Dow/DuPont decision was not based on a solid evidential foundation.¹⁹⁸ He aimed to demonstrate that the decision in Dow/DuPont did not meet the burden of persuasion established by the courts through the steps described above. He encourages future assessment of innovation competition to improve its application of theory as evidence. As to his views on the preservation of innovation competition through mergers as a goal, he does not seem to disagree with the end, but with the means to reach it.

4.5.4 Jorge Padilla¹⁹⁹

In a paper published in the *Journal of European Competition Law & Practice*, economist Jorge Padilla provides his views, as well as an overview, on the debate.²⁰⁰

He begins with a short description of the views of Esteva Mosso, specifically on whether or not it is a novel, untested, theory of harm and on the supposed general nature of the Commission's assessment of innovation,²⁰¹ contrasting them with dissenting opinions to the contrary. Establishing that the debate has been lively, Padilla moves on to describe several areas of economic theory which he perceives to be in consensus, for example that mergers may have an impact on incentives to innovate and that efficiencies resulting from a merger could lead to an effectivization of R&D expenditure.²⁰² He goes on to state that it is instead the application of theory that remains the main focal point of discussion.

¹⁹⁷ Petit, pages 917 and 918. See also the above notes on Airtours, specifically the importance placed on input neutrality for the decision's final outcome.

¹⁹⁸ Petit, page 919

¹⁹⁹ Senior Managing Director at Compass Lexecon, Research Fellow at CEMFI (Madrid) and teacher of competition economics at the Barcelona Graduate School of Economics (TSE) and the Toulouse School of Economics.

²⁰⁰ *Revisiting the Horizontal Mergers and Innovation Policy Debate*, Jorge Padilla.

²⁰¹ As in not being based on a specific economic model.

²⁰² See Padilla, page 464.

One point of view presented, is that of recognizing the need to make assessments on a case-by-case basis, while still maintaining a presumption that horizontal mergers lead to a reduction of innovation. This means, according to this point of view, that any investigation should focus its attention on approximating just how much, and not if, innovation is reduced.²⁰³ This view assumes a similarity between price effects and innovation effects, which was one of the standpoints criticized by Petit. The counterclaim is that this outlook instead risks blocking mergers that are procompetitive.²⁰⁴

4.5.4.1 Structural presumption

There is a structural presumption that a horizontal merger significantly impacting market concentration and structure leads to price increases. This presumption can be overturned in several ways, for example through demonstrating that there is countervailing buyer power, or low barriers to entry. Even absent these arguments, it can be argued that the efficiencies gained through the merger will compensate for any effects on pricing.²⁰⁵

Padilla considers that a similar presumption could be justified in regard to innovation effects, if it can be shown in theory and/or through evidence that mergers among competitors in industries with few innovators generally reduce incentives to innovate, in the absence of efficiencies.²⁰⁶ He goes on to state that there are examples of this in the doctrine. Summarized, [A] horizontal merger *may* cause a loss of innovation *if* the merger internalizes the negative externalities the investments of one party cause on the other”. An example cited by Padilla is a study by Federico et al.²⁰⁷ whose findings indicate that this would be the case in a sector where innovation is stochastic.²⁰⁸ In such a sector, the innovators are likely to be close competitors in the same downstream markets and there are “diseconomies” of scale in R&D, leading to the merged entity generally not wanting to concentrate their research efforts in one facility. While keeping both facilities open, an investment into one would indicate a lower return on R&D investments for the other. This means that the merger internalizes the negative externality, indicating that the optimal choice for the merged entity would be to keep operations running at both facilities with reduced investment. In Padilla’s view, Federico et al. manages to show that this effect overshadows positive effects on innovation, due to price effects caused by the merger. Their model also takes general innovation in the sector into

²⁰³ Ibid.

²⁰⁴ Ibid.

²⁰⁵ Ibid.

²⁰⁶ Ibid.

²⁰⁷ Federico et al., *Horizontal Mergers and Product Innovation* and Padilla, page 465.

²⁰⁸ Such as the conditions the innovation space concept seemed to be developed for, in Dow/DuPont.

account, as it shows that even though competitors may increase their efforts, overall impact on innovation is negative following such a merger.

Another example provided is that of Motta and Tarantino,²⁰⁹ where the internalization of a negative externality by a merger results in a reduction of innovation. The authors of this paper conclude, as presented by Padilla, that firms invest in innovation primarily to reduce costs, which leads to a competitive advantage for them. As opposed to the above model, here innovation is decreased through internalization of negative externalities when incentives to continue such innovation is lowered by a merger. Reducing output leads to a further decrease in incentive to cut costs (through innovation), with lower cost margins per product, profit increases. Similarly to Federico et al., the efforts of competitors are not enough to offset the negative effects on innovation.

The next example is a model developed by Salinger.²¹⁰ He used a model in which firms compete on quality, represented in the model by R&D investment. R&D investment by one firm was predicted to reduce the profitability of R&D investments by competitors and Salinger determined that the effect on incentive to innovate depended on whether the diversion rate between the merging parties was smaller or larger than the R&D spillover effect. This is measured as the rate at which the merging firm's sales increases in relation to its partner due to quality increases. This describes the impact of R&D investment from the point of view of the other merging party (under the same assumptions of R&D investment and costs as above).

Julien and Lefouili developed a model where mergers in an environment where innovation competition takes place through stochastic innovation (as above) did not reduce incentives to innovate. This is the case when the expected incremental profits from a single innovator in a no-merger scenario is overshadowed by the gains from a second innovation from the merged entity.²¹¹

Padilla considers the above (and other) studies indicative that there is no justification for a structural presumption of harm in horizontal mergers.²¹²

4.6 Summary and conclusions

The points of view presented can, in my opinion, be roughly interpreted as two of them being for and two against the decision reached. I believe that several

²⁰⁹ M. Motta and E. Tarantino, *The Effect of Horizontal Mergers When Firms Compete in Prices and Investments* and Padilla, page 465.

²¹⁰ M. E. Salinger, *Net Innovation Pressure in Merger Analysis* and Padilla, page 466.

²¹¹ B Jullien and Y Lefouili, *mergers and investments in new products*.

²¹² Padilla, page 471.

points can be derived from the discussion. First, is the general, either outspoken or implicit, agreement that innovation considerations should be an important aspect of merger control. Lianos' article was specifically chosen to illustrate the viewpoint that, although Dow/DuPont was in line with the goals of merger control, enforcement could be even more conscious of the goals of the EU in general. He argued that some of the "higher" goals and aims of the EU, such as environmental protection, could help designate how better to protect innovation. In my view, this outlook is not necessarily in disagreement with the main criticisms of the decision, and I cannot object to a more detailed look at what specific *kind* of innovation competition is being protected or promoted, especially when looking at specific product lines. This seems to already be the case in some pipeline pharmaceutical cases, such as Novartis/GSK and Pfizer/Hospira, where the Commission appeared to attach, at least in principle if not as a motivation, importance to the *purpose* of the products being developed.

The second, and in my opinion the most significant for future application, is that of evidence. This is primarily demonstrated in Petit's article, where it is also the main point. Petit maintains that the evidentiary standard underpinning the decision is too low. According to him, the Commission did not fulfill its duty to provide a certain standard to its decision, and criticized the decision using the test established in *Tetra Laval*. In essence, the presumption of a structural reduction of innovation was not justified by the theories used, and Petit believed that the decision would not hold up in court. As also mentioned in the introductory chapter, the Commission's decisions are subjected to legality check by the courts, which is what happened in *Tetra Laval*. Later decisions should naturally be held to the same standard. If the suggested remedies were not accepted and the decision subsequently appealed, it is possible that it would have been overturned by the courts on the same grounds. Even though Esteva Mosso argues for a case by case assessment, he still maintains the structural presumption criticized by Petit and Padilla. In my view, Padilla's paper in turn provides a good overview of theory, with which the next innovation decision could build its "Annex 4". As mentioned, neither Padilla nor Petit argued that innovation should not be protected under the merger control regime, but rather that if innovation was to be protected, procompetitive mergers should not be hindered under a presumption of harm. This does not preclude the inclusion of other goals of the EU in the assessment, as long as the evidentiary requirements set by *Tetra Laval* are met.

5 Start-up Acquisitions

5.1 Start-ups as a vector for innovation

Start-up companies, or start-ups,²¹³ are privately held companies driven by entrepreneurs, usually to develop what the founders believe to be an innovative idea. They are generally defined by their scalable business models²¹⁴, (usually with an intention to grow) as opposed to entrepreneurship in general.²¹⁵ The nature of start-up companies does indeed lead to a high failure rate, but success can also be spectacular and software makes running a start-up cheaper than ever.

“Unicorns”, defined in a TechCrunch article by venture capitalist Aileen Lee as companies which have grown in valuation to over \$1 billion, have emerged by an average of four a year from 2003-2013 and twice that from 2012-2015.²¹⁶ Most leading technology companies were once start-ups, including the FAANG-companies²¹⁷ and Microsoft, although only Facebook was founded within one of the time periods specified above (and defined as a unicorn). This also demonstrates the ability of the start-up business models to not only show aggregate value, but also to be market disruptive, either through the use of their own innovation or by making superior usage of contemporary technology. For example, Microsoft was able to usurp IBM’s position as market leader by entering the burgeoning market for operating systems. Apple used existing technology in its invention of the iPhone, almost singlehandedly creating the market for the smartphone, a device which is ubiquitous today. Google pioneered the usage of search engine data aggregation and page ranking, while Facebook utilized the concept of user-generated content and network effects to grow its platform. Although not likely to cause a full “creative destruction”, Amazon is

²¹³ Alternatively known as “Growth firms”, but the above usage is more commonly used.

²¹⁴ For example, by using an adaptative development of Toyotas Lean production model known as “Lean startup”. Releasing a “minimum viable product” leads to direct consumer input into the product development cycle, offering opportunities to minimize wastage (and the need for outside funding), leading to cheaper and more efficient product development. See *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses* by Eric Ries.

²¹⁵ Such as a family-owned trucking business where growth is more traditional, and the business model lacks scalability.

²¹⁶ <https://techcrunch.com/2013/11/02/welcome-to-the-unicorn-club/> and <https://hbr.org/2016/01/how-unicorns-grow-for-the-2012-2015>.

²¹⁷ Facebook, Amazon, Apple, Netflix and Google.

leading an extensive expansion of E-commerce, with online sales steadily increasing in relation to traditional on-location retail.²¹⁸ These are all examples of disruptive innovation described above, and the proliferation of start-ups is, in my view, a clear vector for innovation in and of itself.

Many of today's smaller unicorns have achieved their status not by growing into FAANG-like giants, but by buyouts from larger firms.²¹⁹ Tech giants have access to large amounts of capital, and tend to choose acquisitions of established technology over internal development due to the low-growth environment of the above time periods.

5.1.1 Recent decline in start-up activity

While the start-up business model has proven successful so far, indications are that start-up proliferation is slowing down in the face of competition from the incumbent giants.²²⁰ Since 2014, start-up financing by venture capitalists has gone down, which can be partially explained by this unwillingness to finance a start-up that could end up in direct competition with one of the industry giants. Now, this unwillingness does not necessarily stem only from a fear of early acquisitions, but also from the risk of the start-up being copied.

An example is Amazon's web services, AWS, which has partnered with start-ups, but ending up copying their products while pushing into its territory.²²¹ When a start-up is reliant on an incumbent as a distributor, this can become problematic.

Even outside of outright copying, incumbents can put a damper on a start-up's prospects in other ways, for example through the prospect that they will be moving into a start-up's space.²²²

In my view, this is primarily an issue of appropriability, lowering the chance that a start-up can make successful use of its innovation. This problem will be further discussed in relevant sections on kill zone acquisitions below.

5.2 Special advisers' report on digital competition

²¹⁸ <https://www.statista.com/statistics/534123/e-commerce-share-of-retail-sales-worldwide/>

²¹⁹ <https://www.forbes.com/sites/neilhowe/2015/03/18/whats-feeding-the-growth-of-the-billion-dollar-unicorn-startups/#220317fb2654>

²²⁰ <https://www.economist.com/business/2018/06/02/american-tech-giants-are-making-life-tough-for-startups>

²²¹ Ibid.

²²² See also section 5.2.2 below.

In the special advisers' report *Competition policy for the digital era* published in 2019, the authors assess digital competition on multiple levels, including innovation competition directly, and certain areas to which innovation is linked, such as the creation of synergies.²²³

5.2.1 Market identification and Product Ecosystems

For start-ups, identifying clear future product markets and the nature of Lean product development makes it harder to establish the aforementioned pipelines and “innovation spaces” relied upon by the Commission for its assessment.²²⁴ It wasn't considered irrelevant, just not entirely adequate to the task of determining potential innovation competition at such an early stage. It is instead argued that a concept involving conglomerate threats to market dominance is more appropriate.²²⁵

In lieu of the aforementioned “innovation spaces” or the more clearly defined product pipelines, the authors suggest taking a broader view when considering harm to competition rising from conglomerate mergers. Limiting it to cases where the acquirer holds a “multiproduct platform and/or an ecosystem”, benefitting from strong network effects which act as a significant barrier to entry, and where a dominant position is especially strong. The nature of acquirers like this means they will generally seek to buy out companies within a so called “Zone of Interest”, focusing on acquisitions in proximity to its digital ecosystem.

Evaluating and developing new theories of harm to evaluate these digital ecosystems may be necessary, according to the authors. The report primarily considered the dominance aspects of conglomerate start-up acquisitions, placing focus on specific cases where it would lead to a strengthening of an already dominant position. The main difference in evaluation from the standard model is that such effects should be considered even outside the traditional product market definitions, where the acquirer is dominant and where there would normally be no competition concerns raised. Earlier chapters of the report stressed the importance of protecting and enabling competition *for* the markets.²²⁶ Acquiring start-ups which could grow into potential market entrants could be problematic in this regard, even if the stated purpose is to acquire

²²³ Their recommendation in regards to legislation was for the EU to [wait and see] before introducing transaction-based thresholds in the EUMR, considering that several member states, such as the UK, Austria and Germany already have such implementations which the authors believe should be further evaluated.

²²⁴ Special advisers' report , chapter 6, section 3.

²²⁵ In line with Shapiro's concept of contestability to foster innovation.

²²⁶ Since competition in them tends to be limited.

specific services, products or personnel.²²⁷ The “ecosystem” nature of dominant actors in this field may mean that such scenarios pass under the radar of relevant authorities. If a smaller potential competitor is only horizontally active on what is considered the outer rim of the larger ecosystem, it is difficult to ascertain whether the potential for competition will materialize and the time frame to determine this is “rather long”.²²⁸ This leads the authors to consider such transactions more likely to be considered conglomerate mergers, which are generally less likely to raise competition concerns and are more likely to lead to efficiencies. Current theories of harm seem limited to foreclosure of rivals and coordinated effects.

The report considered the SIEC-tests “strengthening of dominance” aspect still relevant for assessing these types of mergers and instead considers the gap to exist in the theories of harm used in the assessment of conglomerate mergers. A determination of whether an acquirer and a target operate in the same “technological space” or “users’ space”²²⁹ should be carried out, which should then be assessed almost as if it was a horizontal merger. That is, considering competitive constraints and increases of market power within the “space” and then considering efficiency gains.

5.2.2 Killer acquisitions in the special advisers’ report²³⁰

The report acknowledges that the types of acquisitions described here have been compared to the “killer acquisitions” common in the pharmaceutical industry. They are carried out when a potential competitor with a potential innovative product in development, subsequently shutting this down post-merger. This removes a potential innovation competition threat before it has a chance to materialize, allowing the acquirer to maintain its market position. In the tech field, considering the buyouts of smaller innovative firms establishes a new “kill zone”, where start-ups hold off on innovation investments due to proximity to the giants. Successful innovation in this zone that catches the eyes of a behemoth could be either copied or simply bought.²³¹

The report’s authors do not consider this a typical scenario,²³² more com-

²²⁷ Authors note, not mentioned in report. Facebook for example mentions the importance of acquiring new and competent staff, adding them to its corporate infrastructure to reduce stagnation.

²²⁸ Authors note, I take this to mean in regard to the usual time frames employed in the merger control regime. Lengthening these is a possibility

²²⁹ Compare “innovation space”.

²³⁰ Also look at their primary source

²³¹ Note that start-ups sometimes see buyouts as a preferred outcome, (Microsoft skype)

²³² Even so, developing theories of harm for the scenario could probably be useful even if not common. Consider IBM buying Microsoft to cancel their OS innovations. (Although IBM not realizing the value of OS was what led to their fall from the top).

monly the bought entity is integrated into the larger ecosystem, often increasing efficiencies by adding complementary services in comparison to simply “killing off” innovations.²³³ This adds another layer of complexity mostly specific to the tech sector.²³⁴

The mergers in question, as mentioned above, do not usually concern mergers involving direct competition on what would be considered the acquirers core market. The report uses Facebook’s acquisitions of Instagram and WhatsApp as examples of this. WhatsApp was not a social networking platform like Facebook, neither was Instagram, but they were both competing with Facebook on a segment of its ecosystem: Messaging and photo sharing, respectively. The Commission’s investigation of Facebook/WhatsApp in particular found some overlaps but considered the broader nature of a social networking site as a key difference, choosing not to judge WhatsApp as a close competitor.²³⁵

By using a market definition closer to the “users’ space” as discussed above, WhatsApp could have been included in a general market for “networking services”, acknowledging a degree of substitutability for certain users,²³⁶ as different user needs would result in differentiated services. This presents a risk of over-estimating the competitive constraints on Facebook. Because of its nature as an operator of a broad ecosystem containing differentiated services and partial overlaps, just applying the horizontal rules could fail to catch the driving force of the merger, leading to unforeseen enforcement effects.

The acquirers’ position could also enable it to identify and anticipate emerging consumer trends and patterns early, allowing them to react by introducing their own products or by acquiring relevant start-ups. This means that risk to competition resulting from foreclosing rivals’ access to inputs is diminished, with the greater risk of harm instead arising from the strengthening of a dominant position. Adding new services to an existing ecosystem reinforces it both by adding complementary value to users as well as by retaining other users where the services are substitutes in some way.²³⁷

²³³ It could be argued that even integration could slow innovation, if potential rivalries are snuffed out and assimilated instead of attempting to compete, decreasing overall contestability.

²³⁴ A pharmaceutical company is more likely to shut down competing innovations post-merger, reference above cases with pipelines.

²³⁵ Do note that disruptive innovations often start with a low level of overlap. Any post-*innovator’s Dilemma* corporate defense strategies would probably keep this in mind.

²³⁶ Even today a large share of WhatsApps users use it for messaging, opting out of Facebook’s own Messenger application. Since Facebook’s revenue is driven by ads, however, gathering user data from WhatsApp is likely a goal in itself, with user migration being a secondary concern. Consider again platform integration as an efficiency defense – consumers get to use their preferred application and Facebook gets their data for personalized ads.

²³⁷ Facebook and WhatsApp could be considered partially substitutable as pertains to their messaging services, while Facebook and Instagram could be considered complementary as to the differing structure and nature of sharing and viewing content on Instagram and the main Facebook platform.

The incumbent may not be dominant in a complementary service market when it is analyzed separately, but in taking a broader view and viewing the market as a “market for the digital ecosystem” a significant impediment to existing competition could more easily be identified. Where the acquirer already enjoys significant network effects, a complementary service could strengthen these and reinforce the entirety of its ecosystem. After the integration of a complementary service, the ecosystem is less likely to see a drop in user numbers.²³⁸

The report suggests focusing on the effects of these acquisitions on the market positions of the ecosystems and in what ways barriers to entry are formed and maintained. This could help assess whether an acquisition is of a defensive nature. There is a clear distinction here between an “innovation space” as used in the agrochemical mergers and a “users’ space”. As mentioned above, acquisitions like this strengthens the positive network effects of the incumbent while also raising barriers to entry. When looking at the reinforced position in which the incumbent would find itself post-merger, high purchase prices may be justified even if the incumbent very well could have developed similar services themselves. In this way, it could be seen as purchasing network effects and a user base (or the potential of one) rather than buying promising technology.²³⁹ The report considers that such acquisitions could be a significant impediment to effective competition where the target company could have succeeded as a stand-alone business or if it could have been bought by another competitor. By using this theory of harm, the difficulty of ascertaining potential competition in the acquirer’s core market could be avoided, while offering the ability to intervene in mergers where the target has a fast-growing user base (and is, therefore a threat).

The report mainly concerned itself with the substantive appraisal, sketching out the theory of harm described above, while advising to leave thresholds untouched until the German and Austrian models could be evaluated. This runs the risk of mergers that would be considered anti-competitive even with the novel “conglomerate ecosystem/user’s space” theory of harm may still fall under the standard thresholds.

²³⁸ Facebook and Instagram are once again the best example. As mentioned above, user trends vary, and businesses use different marketing tools to reach them. In maintaining both services in its ecosystem, Facebook can cater to different user needs. Facebook themselves published a study to assist potential advertisers about how to decide where and how to market their products, available here: <https://www.facebook.com/business/news/insights/facebook-and-instagram-a-tale-of-two-feeds> (Last retrieved 2019-11-07) In my view, this further reinforces Instagram’s complementary nature to Facebook.

²³⁹ Note, again using our main example, that Facebook corporate leadership has stated that one of the reasons for purchasing Instagram and WhatsApp was to acquire its talented personnel.

5.3 Bourreau and De Stree

The Commission report utilizes a paper written by Bourreau and DeStree in its development of this theory of harm.²⁴⁰ The paper was written to analyze the effect of digital conglomerates on product innovation to provide recommendations for EU competition enforcement. This section will go through their policy recommendations firsthand.

5.3.1 Recommendations on future Market Definitions

In establishing power on a relevant market, static indicators²⁴¹ are more often used. They are often more easily assessed with certainty, fitting well within the model on which competition law enforcement is usually based, which is static. In the EU according to the authors, the Commission and the Courts have already acknowledged that this static model is not always sufficient in innovation heavy markets it may not convey enough information. Since then, the EC developed the concept of “innovation spaces”²⁴², indicating a further shift to accommodate to dynamic markets.

Bourreau and De Stree argue for increasing the importance of dynamic efficiencies in the goals of competition law. Traditionally, allocative efficiency and price-effects have been awarded the highest importance, then static, with dynamic efficiencies coming in last. It is suggested that dynamic, innovation driven, competition should be placed ahead of static. This would aid in maintaining contestability both in and for markets as well as shifting focus forward from existing products and competition.

They also recommend an increased focus on potential competition and barriers to entry on markets defined by outputs, complemented by a definition of input markets. They argue that competition authorities should take specific note on the possible existence of ecosystems in this stage.

In the analysis of innovation specifically, their recommendation is to complement what they call the “dynamised standard analysis based on products output markets” with a new model for analysis. In short, it should focus on capabilities in order to better catch the uncertainties of innovation. This is acknowledged as difficult, as determining which role innovation capabilities actually play in actual product innovation can be uncertain. These difficulties were not considered insurmountable. Even though the tools are not yet well developed, they are at a stage where they could be applied. Citing Kerber and

²⁴⁰ *Digital Conglomerates and EU Competition Policy*. M. Bourreau and A. De Stree

²⁴¹ Such as demand-side substitution and current firm positions.

²⁴² The Dow/Dupont case, mentioned above

Kern directly: “*Clearly, product market analysis can be unhelpful and misleading in dynamic contexts. Using the right concepts imperfectly is better than a precise application of the wrong ones.*” Because of the more limited structured innovation in digital markets in comparison to more static markets, applying an input-based analysis could prove difficult. Defining relevant “Innovation markets” for the main capabilities of the tech sector is nevertheless possible.²⁴³

Competition authorities should then continue by assessing barriers to access these capabilities. Most interesting in the description of this step is the reference to further investigate exclusivity clauses and non-competes for highly skilled personnel. As noted earlier, some of the outward rationale for recent tech mergers have been the acquisition of staff. Following the removal of skilled staff by both employing them at the incumbent and preventing them from developing outside of it are sure to raise barriers to access for other companies.

Bourreau and De Streel also note that the Commission did examine the role of data as an input in the Microsoft/LinkedIn case, but that they did not define a specific market for it as an input.

Their recommendations can be summarized as a shift in analysis from static to dynamic through an increased focus on potential competition and barriers to entry, as well as complementing this with defining capabilities markets.²⁴⁴ They recommended some practical changes to the 1997 Notice on market definition,²⁴⁵ namely using the more dynamic market definitions and market power assessments already found in EU Law.²⁴⁶

5.3.2 Theories of Harm

5.3.2.1 Tying, bundling and envelopment

Bundling²⁴⁷ is prohibited by the EUMR when anti-competitive, the Commission will focus on ability to foreclose the tied market, the incentive to do so, as well as the overall impact on consumer welfare.

Once again considering the specific nature of firms in the digital sector, the authors establish that they are likely to establish product ecosystems due to

²⁴³ The authors provide Data, engineering skill, computing power and very risky capital as examples of these kinds of capabilities. NB for example Mark Zuckerberg’s statements on acquiring skilled personnel. Not as innocent using this model of analysis.

²⁴⁴ Such as data.

²⁴⁵ Relevant market notice.

²⁴⁶ Specifically, the Article 101 Guidelines on Horizontal- and Technology Transfer Agreements for the market definition and the Priorities Guidance on Article 102 for the provisions on market power.

²⁴⁷ Used by Bourreau/DeStreel to also include Tying.

synergies, while their economies of scale and general product modularity enable them to develop products at lower costs. Creating products that could be considered unrelated to their basic offering or complementary increases the incentive to bundle. On the demand-side, generating consumption synergies for consumers inside an ecosystem further encourages firms to bundle and develop their ecosystem in order to harness this increase in value. Because both supply-side and demand-side synergies could be generated more easily in the digital sector, utilizing them are considered more desirable by digital companies.²⁴⁸

The authors suggest further widening the scope of market characteristics in the NHMG²⁴⁹ to better focus on the possible anti-competitive effects of bundling and by using envelopment strategies.²⁵⁰

5.3.2.2 Access to inputs

In the EU merger control regime, competition authorities can impose behavioural or structural remedies where the conditions of an input foreclosure are met. These conditions are based on ability, incentive and negative impact on competition.²⁵¹ Bourreau and De Streel again point to the Microsoft/LinkedIn case as an example of how this is implemented in current enforcement. In the case, the methodology established by para 34 was used in order to determine whether LinkedIn's data was an important input for the development of CRM software based on machine learning.²⁵² In this case, it was found not to be.

5.3.3 Recommendations

To address access to inputs, the authors suggest granting compulsory access to any key component identified by remedy, to the extent that identification is possible. This would allow an entrant to enjoy similar benefits as the conglomerate ecosystem. They propose an assessment of key component characteristics

²⁴⁸ Page 26 sec 3.3.1 (ii)

²⁴⁹ As well as the Priorities Guidance of article 102.

²⁵⁰ For example, when bundling raises barriers to entry (for innovators) and/or by reducing competition through increased differentiation.

²⁵¹ NHMG paras 33-57.

²⁵² Para 34 NHMG is cited: "Input foreclosure may raise competition problems only if it concerns an important input for the downstream product. This is the case, for example, when the input concerned represents a significant cost factor relative to the price of the downstream product. Irrespective of its cost, an input may also be sufficiently important for other reasons. For instance, the input may be a critical component without which the downstream product could not be manufactured or effectively sold on the market, or it may represent a significant source of product differentiation for the downstream product. It may also be that the cost of switching to alternative inputs is relatively high."

to complement this, in order to not skew the trade-off between competition in the short-term and reducing the incentive to innovate by incumbent firms forced to provide access.

5.3.4 Killer acquisitions in Bourreau and De Streel

Bourreau and De Streel believe that the model based on turnover has proven unable to catch transactions where the purchase price has indicated a high-value transaction. For example, Facebook/WhatsApp would have avoided Commission scrutiny if not for a referral by national competition authorities. In contrast with the special advisers' report, they recommend implementing a complementary transaction value threshold, such as the one currently in use by German and Austrian authorities. Putting forward the argument that this does not mean that all acquisitions above this threshold would be considered killer acquisitions and anti-competitive, but that it simply means that they would be reviewed. It is then up to the review process to determine if the price is an indicator of future revenues from an innovative target or if it reflects a payment to ensure market stability, resulting in the killing of the acquired innovation. Applying this complementary change, they argued, would not increase the number of notified concentrations, as transaction value is most often aligned on the parties' turnover.

5.3.5 The Review Process

The review should focus first on determining whether the acquired firm, in a given scenario, could plausibly use its innovation to "eat into" the market of the acquirer. If not, the review can end there. If yes, then the effects of post/merger cannibalization on the incentives on the incumbent should be investigated further. Considering if the gains from letting the innovation onto the market are larger than the expected losses to be incurred, the acquirers market position should be taken into account, since a stronger market position implies a larger potential loss. If an incentive to delay or cancel potential innovation is made clear, the investigation should then look directly into the business plan of the incumbent. The incumbent should be expected to deliver a "clear and convincing" explanation as to why it will use acquired innovation, even if potentially disruptive, and not contain it. The authors suggest that a commitment along those lines would be even more preferable.²⁵³ If such an

²⁵³ Commitments along these lines are further explored in an older study by De Streel and Larouche, *Disruptive Innovation and Competition Policy Enforcement*, (2015). Also referenced in this paper.

explanation is lacking or in the absence of such a commitment, the merger should be prohibited.

5.3.6 Final Recommendations

Bourreau and De Streel consider that competition law enforcement increasingly has to deal with a sector that, due to market effects, is highly concentrated. In addition, it is more uncertain due to the rapid progress of technology and innovation. They stress the need to ensure contestability in and for markets in order to handle concentration, while uncertainty should be handled by experimentation and “learning by doing”.

5.4 Promotion of Innovation through Competition in the ICT Sector

In her doctoral dissertation, Tyagi again raises the issue of high barriers to entry generated by network effects in the digital sector.²⁵⁴ Network effects can generate substantial advantages for early players, which can then be effectively leveraged into a strong position of incumbency. From this strong position, there will be opportunities and certainly incentives to further raise entry barriers and maintain the advantages conferred by strong network effects. This is similar to the concept of the “digital ecosystem” or “users’ space” discussed above, with user flow acquisition and retention strategies all serving to maintain positive network effects in addition to providing complementary synergies.

Tyagi also offers a reminder that network effects are not detrimental to innovation by nature, but that they can also help drive it forward. A merger could, for example, further innovation through increasing the scope of its network and giving consumers the benefit of a larger user base.²⁵⁵

5.4.1 The importance of active acquisitions markets

One point made by Tyagi, is the importance of an active acquisitions market for start-up innovation activity. The so-called “replacement effect” occurs when a firm innovates from a position of monopolistic power, resulting in the profits from newer products eating into profits from the old. The replacement effect, understandably, diminishes the incentive to innovate and develop new products

²⁵⁴ Tyagi, page 144.

²⁵⁵ One of the main attractions of the Facebook platform is, in fact, its large user base; Tyagi, Chapter 3.

for a dominant incumbent. Start-ups do not face this dilemma. Their incentive would instead be to innovate, and in turn to disrupt the market. Once this disruption is achieved, being absorbed by the larger incumbent in the ecosystem is a clear next step.²⁵⁶ Again, note that many start-ups achieve unicorn status on the backs of such transactions.

Large companies in general find it hard to deal with disruptive innovation, which a start-up is much better suited to take advantage of.²⁵⁷ This means that it could be an efficient strategy for bigger firms to seek to acquire outside innovation, rather than to engage in conventional R&D. The incumbents are usually better positioned to make use of any innovation as well, possessing more resources with which to engage in further development.²⁵⁸ Tyagi uses the Apple/Beats merger as an example of this. Apple’s “concentric expansion” strategy called for a review of its strengths and weaknesses, with the stated goal to expand along identified core strengths and away from weaknesses. For Beats, the price received for the acquisition is viewed by Tyagi as a form of “innovation rent”, which was likely to be a motivation for the start-up in the first place.²⁵⁹ This is analogous to the Schumpeterian analysis of rewarding risk taking to disrupt the status quo.²⁶⁰

5.5 Analysis

Both the special advisers’ report and Bourreau and De Streele suggest an adaptation to the market definition framework, arguing instead that it should be expanded to consider an expanded digital ecosystem surrounding the core area of an incumbent. This would allow an assessment focusing on the risk of dominance instead of foreclosure, allowing antitrust enforcement to better anticipate the dynamism of the digital sector.

This seems to be one of the main problems in regard to the investigation of start-up acquisitions, the older and more static outlook has not yet been adjusted for these new types of acquisitions.

As mentioned, however, an active and healthy market for acquisitions remains important for the incentives to innovate for start-ups. Even if not directly dedicated to growing into a FAANG-like platform, forming a start-up with the specific purpose of being bought out could also increase welfare. This was described in section 5.4.1 above, indicating that the prospect of acquisition

²⁵⁶ Tyagi, page 147.

²⁵⁷ Tyagi, page 147. Note that identification of these disruptive technologies is one of the original “Innovator’s Dilemmas”.

²⁵⁸ Tyagi, page 148.

²⁵⁹ Ibid.

²⁶⁰ Ibid.

could be a motivator. This needs to be kept in mind when discussing enforcement in this sector.

Bourreau and De Streel made the suggestion of making acquirers whose business plans indicate a post-merger shutdown explain convincingly that they intend to keep it going, even if disruptive.²⁶¹ In my view, this solution offers the opportunity of both maintaining a healthy acquisitions market and also hindering firms from making acquisitions of innovation they do not intend to develop, thus preventing straight kill zone acquisitions. Further, the evidentiary requirements are well placed, since the first indications of incentive are strengthened with a review of the acquirer's business strategy. If this has been to regularly acquire and shut down competing lines of innovation as a corporate defense strategy, the merger should be prohibited or subjected to remedies.

Further, there is one area in which the special advisers and Bourreau and De Streel disagree, namely merger notification thresholds. The special advisers advocate waiting and evaluating the transaction value-based thresholds introduced in Austria and Germany, while Bourreau and De Streel advocate changing the thresholds right now. In my view, this is also one of the most difficult areas in which to decide upon a change. Several transactions would not have faced oversight had the member states who referred them not had transaction value-based thresholds in place. For this reason, complementing the EUMR with these thresholds would be prudent. One other issue with when to notify mergers is that many kill zone acquisitions are likely to fly under the radar even with thresholds based on transactions values, and this would require a balancing act. On the one hand, protecting smaller innovative start-ups would be in line with the goals espoused in both guidelines, but on the other it would be very difficult to design a system of notification to catch these, while not burdening the DG Comp with an impractical workload. This could be an area of further study, as whatever solution of the above is decided upon, without a notification system able to catch these mergers, any attempts at enforcement would be rendered impotent.

One area of difficulty encountered during my investigation of this area, copying and misuse of distribution platforms, should not be considered under merger control. Instead, I consider this an area to be considered under the abuse of dominance framework. However, the digital ecosystem model described above could prove useful here as well, in my view. The model could serve, as above, to help establish a dominant position in much the same way as it is used in merger control, to determine whether such a position is strengthened by a merger. Establishing incumbents in digital ecosystems as holding a dominant position within them could go a long way towards placing their hitherto unenforced anticompetitive activity under scrutiny.

²⁶¹ Section 5.3.5 above.

6 Summary

The main aim of this study was to provide an overview of the Commission's framework for assessing innovation effects arising from mergers. More specifically, the question to be answered was in what way innovation was taken into consideration in the merger assessment. This question was primarily answered in chapter 3, through the descriptions found in the guidelines and the exemplifying cases. This demonstrated that innovation is an important criterion in merger control, and that the Commission was willing to protect products very early in product development even before the Dow/DuPont decision.

The Dow/DuPont decision in turn introduced and carried with it the concept of the "innovation space", as well as a more general presumption of harm to innovation. As shown by the above discussion, the main problem with the case was evidentiary. According to Petit, the decision would likely have been overturned if appealed to the courts. In my view, there has been a wealth of academic writing since the decision was published, some of it presented by Padilla above. The Commission should take this into account when considering future innovation cases, using it as an aid to help establish a strong evidentiary foundation moving forward.

The secondary purpose was to evaluate how well this framework protects innovation generated by start-ups. First, I should mention that one of the main problems turned out to not be acquisitions, but instead copying. This led to a decrease in start-up financing and is generally a problem not best handled through merger control. However, I believe that one of the main contributions of the work of the special advisers and Bourreau and De Streel will be the usage of the "digital ecosystem" model to establish dominance for abuse of dominance cases, in addition to its suggested usage for merger control.

Further, most authors, including the Commission's special advisers, recommend some sort of changes to the framework in order to better preserve the innovation brought forward by start-ups. I believe that in order to better catch these acquisitions, that a change in the system of notification is required. Without a change in the notification system, kill zone acquisitions which would otherwise be caught by any new forms of substantive assessment would still pass without scrutiny. This is an area which, in my view, should be prioritized for further evaluation.

The suggestions for substantive assessments to protect start-up innovation in both papers were centered around the defining of a digital ecosystem, from where the evaluation could proceed. Having established this position of power

for the incumbent increases the likelihood that competitive harm could be found, when a transaction would otherwise have been deemed a non-horizontal conglomerate merger. Using this new model, enforcers can check if an acquirer has incentive to discontinue innovation, such as in Dow/DuPont or if the innovation threatens to disrupt the incumbent's core area. Alternatively, specific market conditions could be examined in relation to the formation of new barriers to entry, in order to determine whether an acquisition is defensive in nature. Since all of this builds upon the concept of the digital ecosystem, I consider it the best addition to the analytical framework put forward by the reports discussed.

It should also be noted that the special advisers' report discarded the usage of the "innovation space" framework for the assessment of start-up innovation, instead opting for the digital ecosystem model in order to better determine effects on innovation.

Further, some caution would also be advised as further changes are proposed, since an active and healthy acquisitions market seems to play a part in the incentive behind the formation of some start-ups. Any future changes to merger control practice would need to keep the risk of overenforcement through type I errors to a minimum, in order to ensure a continuing demand from bigger firms to supplement their own R&D efforts.

In summary, I consider the protection of innovation competition in the EU merger control regime to be robust, despite the above criticism. Innovation is a criterion given weight within the assessment of mergers, and the framework has shown itself to be flexible enough to adapt to varying innovation effects. In my opinion, the Commission's decisions reflect a strong commitment to the preservation of innovation competition.

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