



**JOINT DOMINANCE IN THE NEW
EUROPEAN ELECTRONIC COMMUNICATIONS CODE
AN OPPORTUNITY TO ENSURE CONSISTENCY & LEGAL CERTAINTY**

**A REPORT PREPARED
ON BEHALF OF
VODAFONE**

**BY
ALEXANDRE VERHEYDEN
JONES DAY**

AND

**JORGE PADILLA
COMPASS LEXECON**

SEPTEMBER 2017

TABLE of CONTENTS

I.	Introduction.....	4
A.	Purpose of this Paper.....	4
B.	The Code: new regulatory reform and opportunity to clarify joint dominance	6
C.	Consistency of the Code with competition law: a matter of legal certainty	8
II.	Joint Dominance in Competition Law	10
A.	Ex post: the birth of joint dominance under Article 102 TFEU.....	11
B.	Ex ante: joint dominance under the EUMR – safeguarding the evidentiary standard ...	19
C.	Conclusion: joint dominance is well-established in EU case law	24
III.	Joint dominance in the EU regulatory framework for electronic communications.....	25
A.	Joint dominance in a regulatory maze: a codification of confusion.....	27
B.	Joint dominance in NRA assessments: the Commission as guardian of <i>Airtours</i>	29
C.	Explaining the paucity of joint dominance cases in the telecommunication sector.....	34
IV.	Joint dominance in Economic Theory	36
A.	The economics of tacit coordination	36
1.	Transparency	38
2.	Availability of a retaliatory mechanism/Disciplining Mechanism – Monitoring.....	39
3.	Absence of Countervailing Powers/ External Stability	41
4.	Interactive Application of All Three Criteria	41
B.	Necessary Conditions are Not Sufficient Conditions.....	42
C.	Application to the Telecoms Sector – Likelihood of Coordination	44
1.	Likelihood of coordination	44
2.	Analysis of the Costs of Type I and II Errors in Ex-ante Regulation.....	45
D.	Conclusions	57
V.	Joint dominance in the new Code: an opportunity to ensure consistency and legal certainty	
	59	

EXECUTIVE SUMMARY

Prior to finding its way into electronic communications regulations, the notion of joint SMP finds its roots in the concept of joint dominance in competition law. Joint SMP or dominance is at the confluence of different competition law concepts: Article 101 TFEU which prohibits coordinated practices between competitors, Article 102 TFEU which prevents an abuse of a dominant position by several firms collectively and the EU Merger Regulation (“EUMR”) which allows the prohibition of mergers resulting in coordinated effects.

The interpretation of joint dominance has undergone a gradual, but significant, evolution since the 1990s, ultimately culminating in the well-known *Airtours* criteria. Under *Airtours*, a collective dominance can only be found where the market is transparent, where firms are able to retaliate and counter any deviation from a coordinated conduct (thereby creating a disincentive to depart from it) and the absence of countervailing forces from firms typically not part of the collective dominance and who are not capable of disturbing the coordinated practices of the firms which are collectively dominant.

Collective dominance has been applied both in *ex post* and *ex ante* contexts. The *ex post* application of collective dominance means that the finding of collective dominance takes place *a posteriori* based on a precise set of facts which have occurred in the past. In the case of its application *ex ante*, collective dominance is assessed by reference to likely future market developments or conducts.

Collective dominance has only been applied in an *ex post* context under Article 102 TFEU in a handful of cases. Where collective dominance was found, the Commission and national competition authorities consistently sought to support such a finding with evidence of actual and verified past market conditions and conducts.

In an *ex ante* context, under the EUMR, the Commission has been equally cautious in order to only find collective dominance in instances where the market was already prone to coordinated effects, and in particular where it already exhibited strong indications of coordination between market players. For example, in one of its most recent decisions concerning the acquisition of SABMiller by AB InBev, the Commission referred extensively to evidence of already established past coordination, particularly in relation to previous cartel decisions, to conclude that there was a risk that the merger would result in coordinated effects.

Therefore, a rigorous application of the three-prong *Airtours* test, coupled with the appropriately elevated standard of proof, has ensured well-grounded and accurate findings of collective dominance *ex post* or a risk of coordinated effects *ex ante*, in order to avoid unjustified regulatory interventions which could have chilling effects on investments.

An appropriate application of *Airtours* in finding collective dominance is also crucial in the context of the EU electronic communications framework. This is first because the EU electronic communications framework is based on competition law principles and must therefore be applied

and interpreted in accordance with competition law. Second, a rigorous application of the notion of collective dominance is all the more necessary because it is applied *ex ante*, with the difficulty of predicting future conducts and market developments.

A codification of collective SMP in the new Electronic Communications Code should therefore uphold the *Airtours* test, and an application thereof must be coupled with the same evidentiary standard that has been applied in competition law. This is further corroborated by the following:

- The *Airtours* test is praised by scholars and practitioners for being both legally and economically sound.
- In instances where NRAs have found joint SMP, they not only demonstrated a close and meticulous application of the *Airtours* criteria, but also took into account, in addition to structural characteristics, cogent evidence on the basis of behavioral characteristics on the part of the operators in order to establish collective SMP. This clearly demonstrates the effectiveness of the *Airtours* test in a regulatory context, so long as the appropriate evidentiary standard is met.
- At a stage where the primary focus of regulation is no longer to facilitate market entry to compete with the dominant incumbent in each national market but rather aims at allowing existing operators to compete all the while being able to invest, it is crucial to avoid unduly regulating competitive markets, in order to prevent the stifling of investment and innovation (Type I errors). This is evidently a concern which NRAs understand and share, which partially serves to explain the paucity of collective SMP findings, and the corresponding elevated standard of proof applied by the Commission and NRAs. A consistent application of the *Airtours* test, applied with the right level of scrutiny and underlying evidence of anticompetitive conducts, will mitigate against these concerns.

Conversely, any departure from the *Airtours* test and the appropriate evidentiary standard is likely to raise a number of issues:

- First, it would run counter to the principle of **legal certainty**. It is well-established that the EU Electronics regulatory framework must maintain consistency with EU competition law, and deviating from it will result in legal uncertainty, generate a high degree of inconsistent regulatory interventions and ultimately is likely to translate into extensive legal disputes between regulators and market participants.
- Second, allowing a finding of joint dominance based on criteria other than those contained in *Airtours* would also be **countercyclical**, given that the arch principle of the electronic communications regulatory framework is to align regulatory intervention on competition law standards. A codification of collective SMP setting aside *Airtours* would go in the opposite direction of what the regulatory framework has tried to achieved over the years.
- Third, a departure from the *Airtours* test would go against **sound economic policy**. Regulatory intervention should be guided by the risks and costs of unduly regulating competitive markets (Type I errors) or not regulating uncompetitive markets (Type II errors). Since electronic communications markets have been liberalized for decades and investments are one of the parameters on which operators compete, the detrimental effect



of Type I errors as a result of excessive regulation of electronic communications networks and services will be significant, and certainly far greater than the risks arising from Type II errors in the event of insufficient regulation. This is all the more so that Type II errors can always be compensated by the *ex post* application of competition law.

I. Introduction

A. Purpose of this Paper

- (1) This paper commissioned by Vodafone constitutes the legal and economic analysis of the notion of joint dominance, how it emerged, developed and where it stands today from a competition law and telecommunications regulation point of view. It is designed to provide guidance in relation to the legislative process for the draft “European Electronic Communications Code” (hereafter the “EECC” or “Code”) which intends to clarify the conditions for finding SMP on the basis of joint dominance.
- (2) The conclusion of this report is that joint dominance is at the confluence of different competition law concepts. Most anticompetitive practices are the result of formal collusive behaviors caught by Article 101 TFEU or single dominance abuses caught by Article 102 TFEU. Tacit coordination can also produce undesired anticompetitive effects and this is the less common occurrence which joint dominance aims to address. The notion of joint dominance is enshrined in the well-known three *Airtours* criteria, following the judgment of the European Court of Justice in a case bearing the same name. Our extensive review of legal precedents shows an overwhelming consensus about the fact that the *Airtours* criteria are the only sound legal basis for finding joint dominance and can only be applied in instances where the risk of coordination is confirmed by hard evidence. This conclusion applies to all types of joint dominance cases rendered by competition authorities and national regulatory authorities. We therefore conclude that any regulatory codification of the conditions for a finding of joint dominance must, at a minimum, integrate the *Airtours* criteria and provide for safeguards in applying these to situations where actual market data demonstrate the need for regulatory intervention.
- (3) In September 2016, the European Commission introduced the EECC. This will replace the current EU regulatory framework applicable to the electronic communications sector, which currently consists of four directives. In a single legal document, the Code will inter alia set out the procedure to be followed by National Regulatory Authorities (“NRAs”) when conducting an analysis of national communications markets for the purpose of imposing ex ante obligations on certain operators to enhance competition.
- (4) The current framework is based on the premise that in principle, unless operators in a given relevant market hold a position of significant market power (“SMP”, i.e. the equivalent to dominance in competition law), the market is competitive and no regulatory intervention in the functioning of that market is necessary beyond the enforcement of general competition

law¹. Only when a market operator is found to have SMP on a given market can the NRA impose ex ante obligations upon such operator².

- (5) The notion of SMP covers the scenarios of both a single undertaking holding significant market power (single SMP), or a group of undertakings together (joint SMP)³, in parallel with the concept of single and joint dominance under competition law. While the criteria to establish single SMP are well-known and frequently used by NRAs, the notion of joint SMP remains more opaque in the regulatory context, and certain stakeholders have urged the EU to use the upcoming regulatory reform as an opportunity to clarify the concept.
- (6) Any clarification included in the Code should, however, be aligned with competition law principles as developed in the case law of the European Court of Justice (“ECJ”). Indeed, the Code foresees that the notion of SMP shall be interpreted in accordance with the notion of dominance under competition law. Moreover, consistency should likewise be maintained between the new regulatory framework and NRA precedents on joint dominance, which correctly upheld the standard used in competition law. Such consistency is not only a legal necessity, but also ensures legal certainty among market players and consumers alike.
- (7) This paper aims to shed light on the concept of joint dominance under both competition law (II) and the current regulatory framework (III). A thorough examination of the concept shall also be conducted from an economic point of view, demonstrating that the method of establishing joint dominance as applied under competition law – and as also followed within the regulatory framework – is both adequate and economically sound (IV). Finally, the proposed clarification of the joint dominance concept in the current draft Code will be

¹ See recitals 26 and 27 of Directive 2002/21/EC of 7 March 2002 on a common regulatory framework for electronic Communications networks and services, as amended by Directive 2009/140/EC of 25 November 2009 (“**Framework Directive**”). See also Commission Guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services (“**SMP Guidelines**”), [2002] OJ C 165/6, para. 19: “*A finding that effective competition exists on a relevant market is equivalent to a finding that no operator enjoys a single or joint dominant position on that market. Therefore, for the purposes of applying the new regulatory framework, effective competition means that there is no undertaking in the relevant market which holds alone or together with other undertakings a single or collective dominant position*”. This principle remains subject to an exception whereby – even without establishing SMP – under certain limited circumstances obligations can be imposed on all market operators alike (these being referred to as “symmetric obligations”).

² These being called “**asymmetric obligations**”, as they can only be imposed on operators which have been designated as having SMP on a relevant market rather than on all operators.

³ Indeed, Article 14(2) of the Framework Directive – repeated in the Code – provides that “*an undertaking shall be deemed to have significant market power if, either individually or jointly with others, it enjoys a position equivalent to dominance, that is to say a position of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers*”.

assessed, and suggestions shall be made in view of ensuring that the new regulatory framework can be used as an opportunity to provide consistency and legal certainty (V).

- (8) Preliminarily, this introduction sets out a brief historical context of the latest regulatory reform, which has opened an opportunity to clarify joint dominance (B). Moreover, an overview is provided of the special relationship between competition law and the regulatory framework for electronic communications, which is critical to understanding why such context must be consistently reflected in the Code (C).

B. The Code: new regulatory reform and opportunity to clarify joint dominance

- (9) Historically, the telecommunications sector was characterized by the presence of one market operator per Member State, acting as a legal monopolist and ensuring the operation of a national network. In its 1987 Green Paper on the development of the common market for telecommunications services and equipment, the European Commission advocated for the liberalization of the telecommunications sector. This resulted in the adoption of two directives the following year, mandating the introduction of competition on the telecommunications market and endorsed by the ECJ which rebuffed the objections of unwilling Member States⁴. Subsequently, several harmonization directives were adopted by the Council and the Parliament, which aimed at the approximation of rules between Member States.
- (10) In a next notable step, a new regulatory framework was adopted in 2002, primarily aimed at bringing legislation in line with rapidly evolving technology, and improving coordination between the liberalization and harmonization directives⁵. This phase also marked the explicit introduction of competition law into the legislative instruments, and the objective of converging relevant regulatory concepts of the framework (such as SMP) with their equivalents in competition law (dominance) as developed by the ECJ. While most current legislation dates back to the 2002 framework, several directives were subsequently amended in 2009 by means of amending directives. These aimed inter alia at further developing and making available infrastructure, supporting next generation networks⁶, improving the position of customers, and reinforcing the independence of NRAs. Furthermore, a body of

⁴ See Case C-202/88 *France v Commission* [1991] ECR I-1223 and Case C-271/90 *Spain v Commission* [1992] ECR I-5833.

⁵ See also P. Nihoul and P. Rodford, *EU Electronic Communications Law*, 2011, at page 9.

⁶ Allowing for high-speed internet connections based on fibre rather than copper-wire circuits.

European Regulators – BEREC⁷ – was created, which is driven by Member States and serves to ensure a consistent application of the EU regulatory framework.

- (11) Marking the initiation of the latest regulatory reform, on 14 September 2016, in the context of the Digital Single Market Strategy, the Commission published a proposal for a Directive establishing the European Electronic Communications Code. The Code will combine, into one single Directive, the text of four directives currently constituting the regulatory framework – the Access Directive (2002/19/EC), Authorization Directive (2002/20/EC), Framework Directive (2002/21/EC), and Universal Service Directive (2002/22/EC) – and grasps the opportunity to revise certain provisions of the directives. Indeed, since the framework’s last alteration in 2009, market structures have yet again significant evolved, calling for a more efficient, harmonized and updated framework.
- (12) Unchanged by the current reform, and at the heart of the NRAs’ authority to impose ex ante obligations on operators, lies the prerequisite of establishing single or joint SMP. It appears, however, that thus far only a few ex ante obligations have been imposed on jointly dominant operators, as opposed to operators with single SMP, which some consider as an indication of the lack of clarity in the concept of joint SMP as it currently stands. This is for example the stance taken by BEREC in its 2015 Report on Oligopoly analysis and regulation, which stated that *“telecoms cases involving joint dominance are rare and few of those cases have been carried out, even fewer have resulted in legal decisions being taken. One explanation for this is that there is not enough guidance or clarity regarding how to carry out a case of this kind.”*⁸
- (13) The Commission’s legislative proposal for the Code left untouched the definition of SMP, as previously codified in Article 14 of the Framework Directive – which referred to the ECJ’s jurisprudence on joint dominance and to the Commission’s SMP Guidelines⁹. However, several stakeholders (led by BEREC¹⁰) urged that the Code clarify this concept. In subsequent discussions at the parliamentary stage of the legislative process, this stakeholders’ initiative

⁷ This Body of European Regulators for Electronic Communications is not an EU agency and has no legal personality, but constitutes a body of national regulators whereby the Board consists of one representative per Member State.

⁸ See the Report, published in December 2015, at page 59.

⁹ The scope of the SMP Guidelines is to set out principles for use by the national telecoms regulators under the European Regulatory Framework for electronic communications in relation to market-based analysis and assessment of SMP.

¹⁰ In this regard, it should be noted that, to the extent BEREC is carrying out lobbying activities through its Chair, its establishing regulation and rules of procedure foresee that BERECs Chair can only lobby upon a clearly defined mandate provided to him by BEREC’s Board, in a procedure that meets the obligation of transparency. Moreover, the Chair must act independently from any other public or private entity – including NRAs – and may thus not take a position which merely furthers the interests of NRAs.

led to the introduction of new wording in the Code, aimed at offering further guidance to NRAs on how to establish joint SMP when conducting market analysis in view of imposing ex ante obligations. Unfortunately, however, the proposed language appears to jeopardize the opportunity to clarify the notion of joint SMP, as it runs counter to the ECJ’s well-established case law, and thus counter to EU competition law. Moreover, its broad formulation may encompass situations where, based on sound economic theory, joint dominance simply does not exist.

- (14) As shall be explained below, to the extent that clarifying the concept of joint SMP is required in the Code, the incorporation of the economically sound *Airtours* criteria to establish joint dominance – as developed by the ECJ – would be the suitable means to remedy any potential confusion.

C. Consistency of the Code with competition law: a matter of legal certainty

- (15) The EU electronic communications regulatory framework, aimed at liberalizing the sector and enhancing its competitiveness, cannot be understood in isolation from EU competition law. While the original framework of 1998 did not yet emphasize the importance of the relationship between the two bodies of law, the revision in 2002 properly incorporated competition law into the framework. As stated, for instance, in §5 of the Commission’s SMP Guidelines: “*under the new regulatory framework, in contrast with the 1998 framework, the Commission and the NRAs will rely on competition law principles and methodologies to define the markets to be regulated ex-ante and to assess whether undertakings have significant market power (“SMP”) on those markets”*.”
- (16) More importantly, competition law not only forms the cornerstone of the electronic communications regulatory framework – it is intended to eventually replace it. Indeed, as Mario Monti stated in the context of the 2002 reform: “*the aim of regulatory remedies should be to allow antitrust remedies to be the only ones needed in the long term. While for those parts of the industry which can be characterized as natural monopolies, this may be difficult to achieve, as technology develops regulatory intervention will increasingly play a smaller role.*”¹¹ This is echoed in various legislative documents, such as the Better Regulation Directive adopted during the 2009 regulatory revision, and again in the new proposed Code: “*The aim of the EU Regulatory Framework is to progressively reduce ex-ante sector specific*

¹¹ Mario Monti’s Speech on 26 January 2004 in Brussels, Remarks at the European regulators Group Hearing on Remedies during the Public hearing on remedies under the new regulatory framework for electronic communications networks and services. See also J. Scherer, *Telecommunication Laws in Europe*, 2013, at page 42.

rules as competition in the markets develops and, ultimately, for electronic communications to be governed by competition law only".¹²

- (17) Market intervention by way of competition law¹³ is thus the preferred option. Only where competition law cannot adequately address certain market failures – typically where a market is characterized for historical reasons by an ex-legal monopoly with infrastructure complexities – can ex ante regulation have a role to play. In this respect, it can also be noted that before NRAs can impose ex ante obligations on market operators with SMP, they must conduct a thorough market analysis and inter alia establish “*the insufficiency of competition law alone to adequately address the market failure(s) concerned*”.¹⁴ If this criterion is not met, NRAs not only cannot adopt ex ante regulation based on the finding of SMP, they should also withdraw any already existing obligations.
- (18) Competition law is thus inevitably intertwined with the EU electronic communications regulatory framework, which explains the regulators’ insistence on consistency between the two bodies of law. Both use similar legal concepts – most relevant for the purpose of this paper the concept of “dominance” or “significant market power” – which for reasons of legal certainty should be applied in a consistent manner. Indeed, operators must have the legal certainty that such concepts have the same meaning, whether they are applied by European or national authorities, and whether they are applied ex ante or ex post¹⁵. The EU electronic communications regulatory framework hence repeatedly provides that its application must occur in accordance with competition law¹⁶. Specifically in relation to the concept of dominance, the adopted laws explicitly state that the definition of SMP, as currently set forth in both the Framework Directive and the proposed Code, is “*equivalent to the concept of dominance as defined in the case law of the Court of Justice*”. This stance towards a

¹² See Recital 5 of the Better Regulation Directive (Directive 2009/140/EC of the European Parliament and the Council of 25 November 2009), as repeated in Recital 28 of the Code as proposed by the Commission in September 2016.

¹³ It should in this regard be borne in mind that competition law contains both an ex ante (through merger control) and ex post (through Article 101 & 102 TFEU) enforcement aspect.

¹⁴ See Commission Market Recommendation at 2(c), also repeated in the EECC in draft Article 65. Recital 14 of the Market Recommendation specifies that “the application of the three criteria [amongst which the insufficiency of general competition law] should limit the number of markets within the electronic communications sector where ex ante regulatory obligations are imposed and thereby contribute to the aim of the regulatory framework to reduce ex ante sector-specific rules progressively as competition in the markets develops.”

¹⁵ See also J. Scherer, *Telecommunication Laws in Europe*, 2013, at page 115.

¹⁶ See for instance Article 15 of the current Framework Directive, repeated also in Article 62 of the Code.

consistent approach when applying relevant legal concepts is simply a natural consequence of the intent to eventually replace sector-specific regulation with competition law¹⁷.

- (19) Accordingly, it is primordial that the Code – in particular where it introduces new or additional language rather than merely recasting the Directives currently in force – maintains this consistency with EU competition law, and that its provisions on SMP adhere to the concept of dominance as interpreted by the ECJ’s competition law jurisprudence.

II. Joint Dominance in Competition Law

- (20) Competition law, the core of the regulatory framework for electronic communications, encompasses a body of rules aimed at protecting the competitive process, and hence maximizing consumer welfare. These rules can be applied **ex post** – to correct or penalize existing or past anti-competitive practices of undertakings active on the market (such as an abuse of dominance, or a cartel between competitors); or **ex-ante** – to prevent future anti-competitive effects on the market and maintain the current market structure (such as in merger control). In oligopolistic markets, where not just one, but several large operators together may be able to derive benefits from their collective market power, anti-competitive effects on the market can be tackled in both ways.
- (21) Ex post, two provisions of the Treaty of the Functioning of the European Union (“TFEU”) offer tools to halt anti-competitive practices by a group of undertakings. First, Article 101 TFEU prohibits any coordinated behavior between two or more undertakings through agreements or exchanges of information, regardless of whether any such company is (alone or collectively) dominant. This broad-reaching provision thereby captures virtually all forms of detrimental market coordination between undertakings. Second, Article 102 TFEU, applicable only to dominant undertakings, prohibits the abuse of such dominance by either a single firm or by a group of undertakings which collectively holds market power and is able to coordinate behavior even without any agreement or exchange of information (otherwise caught under Article 101). It is under the latter provision that the concept of joint dominance was first developed.
- (22) Ex ante, the EU Merger Regulation¹⁸ (“EUMR”) ensures that a concentration can be prohibited where it may lead to a significant impediment of effective competition on the market (not only by merely enhancing market concentration but also by increasing the risk

¹⁷ J. Scherer, *Telecommunication Laws in Europe*, 2013, at page 42.

¹⁸ Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings.

of coordinated effects between competitors)¹⁹. Coordinated effects may particularly arise on oligopolistic markets where, pursuant to an increase in market concentration post-merger, a few leading market players can jointly hold a dominant position and behave in a manner detrimental to consumers. The concept of joint dominance originally developed under Article 102 TFEU also proved helpful to preventively tackle such anti-competitive behavior.

- (23) Below, it will be explained how the concept of joint dominance was shaped and developed in ECJ case law, and how this concept is applied through competition law both *ex post* (A) and *ex ante* (B). A brief conclusion summarizes the current state of joint dominance under competition law (C), the criteria of which are well-established and applied in a consistent manner both *ex post* and *ex ante*.

A. Ex post: the birth of joint dominance under Article 102 TFEU

- (24) A finding of a breach of an abuse of dominant position under Article 102 TFEU entails *inter alia* the finding of (i) a dominant position; and (ii) an abuse. The ECJ has shaped the concept of single dominance since 1970's, with judgments such as *United Brands*²⁰ or *Hoffmann-Laroche*²¹ in the 1970's up until today with the ECJ's recent judgment of 6 September 2017 in the *Intel*²² case.

The first application of joint dominance had to wait until the *Società Italiana Vetro*²³ judgment in 1992. In this case, besides finding an infringement of Article 101 TFEU, the Commission has also found that three Italian companies abused their jointly dominant position on the oligopolistic Italian flat glass market, hence also infringing Article 102 TFEU. In reviewing the challenge to the Commission's decision, the General Court ("GC") set out the concept of joint dominance, declaring that such joint dominance in itself is not wrongful: "*there is nothing, in principle, to prevent two or more independent economic entities from being, on a specific market, united by such economic links that [] together they hold a dominant position vis-à-vis the other operators on the same market. This could be the case, for example, where two or more independent undertakings jointly have, through agreements*

¹⁹ Or merging undertakings may be forced to alter the proposed transaction so as to eliminate the risk of anti-competitive market effects.

²⁰ See Case 27/76, *United Brands v Commission* [1978] ECR 207.

²¹ See Case 85/76 *Hoffman-La Roche v Commission* [1979] ECR 461.

²² See Case C-413/14P *Intel v Commission*, ECLI:EU:C:2017:632.

²³ Joined cases T-68/89, T-77/89 and T-78/89, *Società Italiana Vetro SpA, Fabbrica Pisana SpA and PPG Vernante Pennitalia SpA v Commission* [1992] ECR II-1403.

or licences, a technological lead affording them the power to behave to an appreciable extent independently of their competitors, their customers and ultimately of their consumers”.²⁴ The GC, however, found that the Commission failed to demonstrate the critical fact that “*the undertakings present themselves on the market as a single entity and not as individuals*”.²⁵ Regarding the burden of proof, the GC further added that: “*for the purposes of establishing an infringement of Article 86 [now 102] of the Treaty, it is not sufficient, as the Commission's agent claimed at the hearing, to 'recycle' the facts constituting an infringement of Article 85 [now 101]*”²⁶, which is essentially what the Commission had done.

- (25) In subsequent cases, the Court further clarified the meaning of “independent economic entities united by economic links” and how to conduct the assessment of an abuse of joint dominance under Article 102 TFEU. In *Compagnie Maritime Belge*²⁷, the Commission investigated the behavior of a group of shipping companies linked by an agreement and collectively benefitting from a block exemption regulation. The ECJ confirmed that “*a dominant position may be held by two or more economic entities legally independent of each other, provided that from an economic point of view they present themselves or act together on a particular market as a collective entity*”²⁸. The ECJ clarified that, while the mere fact that these companies shared an agreement did not in itself constitute a sufficient basis for establishing their collective dominance, this fact may “*result in the undertakings concerned being so linked as to their conduct on a particular market that they present themselves on that market as a collective entity vis-à-vis their competitors, their trading partners and consumers*”.²⁹
- (26) At the same time, the Court also went a step further, stating that “*the existence of an agreement or of other links in law is not indispensable to a finding of a collective dominant position; such a finding may be based on other connecting factors and would depend on an economic assessment and, in particular, on an assessment of the structure of the market in question*” (emphasis added)³⁰. This last sentence clarified that for collectively dominant companies to be united by “economic links”, this did not require any agreement or structural link (such as

²⁴ Ibid., at §358.

²⁵ Ibid., at §366.

²⁶ Ibid., at §360.

²⁷ Joined Cases C-395/96 P and C-396/96 P *Compagnie Maritime Belge Transports and Others v Commission* [2000] ECR I-1365.

²⁸ Ibid., at §36.

²⁹ Ibid., at §43 and 44.

³⁰ Ibid., at §45.

shareholdings). Although the Commission had thus far only pursued situations whereby companies were linked by means of an explicit agreement, the link could potentially also be an expression of the mere economic structure of the market – such as an oligopoly – as long as the companies presented themselves as a collective entity towards others.³¹

- (27) Consequently, by accepting scenarios whereby it sufficed that the mere structure of the relevant market was conducive to anti-competitive behavior – even without the existence of any agreement or structural link between the relevant companies – the door to joint dominance was opened wide. This effectively captured situations of tacit coordination that escaped Article 101 TFEU. Indeed, given the broad scope of Article 101, which already covers all forms of coordination between two or more undertakings, the only truly “unique” situation where joint dominance under Article 102 could be applied was that of tacit coordination, namely coordination without any agreement or exchange of information. This approach, however, was soon assailed by economists and practitioners, who were quick to point out that it is inherently difficult to establish whether companies are tacitly coordinating their behavior, or whether they are merely acting independently pursuant to the rules dictated by the economic rationality of an oligopolistic market structure. Punishing the latter behavior would be disastrous in terms of chilling effects on the market and the stifling of innovation, and the penalizing of rational economic behavior.
- (28) The same criticisms also arose when applying the concept of joint dominance under the EU Merger Regulation (see *infra*), where intervening in the market in an *ex ante* context – which necessarily involves a forward-looking and predictive assessment – without properly establishing potential coordination amongst market players, was considered a danger to market development. Indeed, even more so than in an *ex post* situation, erroneous Article 102 TFEU interventions in *ex ante* situations amplify the potential negative consequences on the market and its consequential risk of Type I errors (identification of false positives). The Commission however acknowledged this critique, and tried to ensure proper adherence to economic principles when establishing joint dominance on the market, both in *ex post* and – as shall be seen further below – in *ex ante* situations.
- (29) In the Commission’s next (and last) joint dominance case brought under Article 102, *Atlantic Container Line*³², the Commission once again went after a shipping conference whereby the economic links between the jointly dominant companies were evident in an explicit agreement, thus foregoing any theories of tacit coordination. Alleging an infringement of

³¹ This is precisely what the Court also articulated in the *Gencor* case, which concerned an application of the EU Merger Regulation (i.e. an *ex ante* assessment), see Case T-102/96, *Gencor Ltd v Commission* [1999] II-753.

³² See joined cases T-191/98 and T-212/98 to T-214/98, *Atlantic Container Line AB and Others v Commission* [2003] ECR II-3275.

Article 102 TFEU, the Commission found that the companies in question had abused their jointly dominant position by entering into an agreement to restrict the availability and content of service contracts, and by altering the market’s competitive structure so as to reinforce their dominant position.

(30) Notably, upon the decision’s appeal before the General Court which upheld the Commission’s allegations, the GC referred to precedents on the ex ante assessment of joint dominance in relation to the EU Merger Regulation. In other words, the GC made it clear that the concept of joint dominance is to be applied consistently, regardless of whether it concerns an ex ante or an ex post application. Moreover, by integrating the case law on joint dominance under the EUMR, the General Court also integrated the test it had developed only a year earlier in the *Airtours*³³ judgment, which essentially summarized the Court’s case law on joint dominance and ensured that concerns of an overly broad interpretation of the concept – disregarding economic reality – would not materialize. This so-called *Airtours* test, still applied today, consists of three criteria that must be examined in an integral manner, not as a mechanical check-list:

- a) First, each oligopoly member must have the ability to know how the other members are behaving, so as to monitor whether or not they are adopting the common policy. In this respect, it does not suffice for each member of the dominant oligopoly to be aware that interdependent market conduct is profitable; rather, each member must also have a means of knowing whether the others are adopting the same strategy and maintaining it. In sum, there must be sufficient **market transparency** or **common understanding**.
- b) Second, the situation of tacit coordination must be sustainable over time. Therefore, an incentive against departing from the common policy on the market must exist in the form of a **deterrence/monitoring** mechanism and adequate retaliation in case of deviation.
- c) Third, the Commission must establish that the **foreseeable reaction** of current and future competitors and consumers will not jeopardize the results expected from the common policy (such as the emergence of new market entrants, or the response of fringe players).

(31) While the test proved helpful in subsequent decisions and was lauded for its economic soundness, the application of the concept of joint dominance – and abuse thereof – under Article 102 TFEU slowly lapsed into desuetude. Indeed, *Atlantic Container Line* became the last successful application of the concept of abuse of joint dominance by the Commission.

³³ See Case T-342/99, *Airtours plc v Commission* [2002] ECR II-2585.

After the repeal of Council Regulation No 4056/86, which provided an exceptional block exemption for the shipping sector, the Commission adopted new rules in 2009 which modified the sector's situation, such that new cases would be unlikely to arise in what had been virtually the only sector prone to findings of collective abuse of dominance³⁴. While complaints have since been lodged with the Commission on the alleged abuse of joint dominance in other sectors (such as by sport associations³⁵ or ink cartridge producers³⁶), the Commission has thus far always rejected such complaints, backed by the Court which has confirmed the Commission's position.

- (32) What is all the more interesting is that in most cases where the Commission found collective dominance, the fact that the undertakings had entered into explicit agreements played a significant role in that finding. Although *Compagnie Maritime Belge* set aside the need to establish structural links or the existence of agreements between the undertakings concerned in order to find collective dominance, in practice, no cases have been brought that did not refer to pre-existing agreements or structural links as a factor in the finding of joint dominance. A parallel can be drawn here to single dominance cases, where the Commission and the Courts have consistently maintained that conduct of an alleged dominant firm can be taken into account in deciding whether it is dominant³⁷. Consequently, it seems that while, in theory, and in line with *Compagnie Maritime Belge*, collective dominance can be established on the basis of objective structural market features alone, in practice, an assessment of the conduct of the undertakings in order to determine whether or not they actually *act* as a collective entity, often contributes to such a finding.
- (33) Similarly, it is notable that instances have been equally scarce of national competition authorities (“NCAs”) and courts concluding to the existence of joint dominance at national level. When joint dominance has been found, this has usually been justified by reference to

³⁴ See also R. O'Donoghue and J. Padilla, *The Law and Economics of Article 102 TFEU*, Hart Publishing, 2013, at page 189.

³⁵ See Case T-193/02, *Laurent Piau v Commission* [2005] ECR II-209.

³⁶ See Case T-296/09, *European Federation of Ink and Ink Cartridge Manufacturers (EFIM) v Commission* [2011] ECR II-425 and on appeal Case C-56/12 P, *EFIM v Commission* EU:C:2013:575.

³⁷ See Case 27/76, *United Brands v. Commission* [1978] ECR 207; Case 322/81, *Michelin v. Commission* [1983] ECR 3461; Commission Decision *Eurofix-Bauco v. Hilti* OJ [1988] L65/19, [1989] 1 CMLR 282; Commission Decision *ECS/AKZO* OJ [1985] L374/1, [1986] 3 CMLR 273, upheld on appeal Case 62/86 *AKZO Chemie BV v. Commission* [1991] ECR I-3359, [1993] 5 CMLR 215; Commission Decision *PO-Michelin* OJ [2002] L143/1, [2002] 5 CMLR 388

strong structural links or agreements between undertakings³⁸, despite the fact that *Compagnie Maritime Belge* explicitly set aside such legal requirement.

(34) The scarce application of the joint dominance concept under Article 102 TFEU, however, is no coincidence and can be explained in view of several considerations:

- **Article 101 is broad and already encompasses virtually all such behavior**

(35) First, Article 101 TFEU, prohibiting all agreements and concerted practices between undertakings, is sufficiently broad to deal with virtually all abusive practices committed by jointly dominant undertakings, in so far as they engage in some type of communication with each other. Indeed, over the years, the scope of application of Article 101 has been construed ever more broadly – some would say wrongly so – capturing not only situations whereby companies agree to coordinate their behavior, but also situations whereby they merely exchange information – regardless of whether such information would have enabled them to actually coordinate their behavior.

(36) In this regard, the *Bananas*³⁹ case is a striking illustration of the far-reaching grasp of Article 101 on market behavior. In this case, a by-object restriction of competition was found through the mere fact that importers of bananas exchanged information on their quotation prices, which differ from actual prices and are not liable to affect the market price. Unlike in a classic cartel, this pure information exchange did not serve as a monitoring device for any underlying price fixing or market sharing agreement, yet the Commission – and ultimately the ECJ – found that this exchange of information constituted a breach of competition under Article 101 TFEU⁴⁰.

³⁸ See to his effect BRISA/SIBS, January 31 2022, Procedure 4/2001, where the Portuguese NCA identified clear structural links between the undertakings deriving *inter alia* from the agreements they had entered into for the joint supply of services of automatic payment for road tolls, resulting in explicit collusion between the two, acting together as a collective entity. See also Décision n° 02-D-44 du 11 Juillet 2002, where the structural links were identified by the French NCA by virtue of the numerous joint ventures that had been entered into by the undertakings; Décision n° 06-D-02 du 20 février 2006, where the structural links resulted from the fact that the undertakings held shares in three coating plants; *Nordea Bank/OP/Sampo Bank*, Finnish Competition Authority, 18 June 2009, Case n° 964/61/2007, where the undertakings jointly owned an ATM operator

³⁹ Case C-286/13, *Dole v European Commission*, judgment of 19 March 2015.

⁴⁰ See also B. Amory, G. Van de Walle and N. A. Smuha, “The Object-Effect Dichotomy and the requirement of harm to competition: on the road to clarity after *Cartes Bancaires* ?” in *the Notion of Restriction of Competition*, eds. D. Gerard, M. Merola and B. Meyring, Bruylant, 2017.

- (37) Article 102 has never been applied to a situation whereby jointly dominant companies coordinated their behavior tacitly. However, tacit coordination (in so far as it exists)⁴¹ is arguably the only situation where Article 102 actually has a unique role to play regarding abusive behavior by multiple undertakings that cannot be captured by Article 101. Furthermore, in light of the ever broader interpretation of Article 101, it is arguable that this provision may be even more widely construed, including situations of tacit coordination and hence questioning the use of the joint dominance concept under Article 102 TFEU. This trend in fact has already seemed to materialize both in the EU and the US, where the mere fact of public announcements by companies, without exchanging information directly with other companies, can be deemed as an invitation to collude, and thus capable of restricting competition.
- (38) Only recently did the Commission go after 14 container liner shipping companies who, without communicating directly with each other, regularly announced their intended future increases of freight prices on their websites, via the press, or through other means⁴². These price announcements did not indicate the fixed final price, but only the amount of the increase per transporter container unit, and the companies were not bound by the announced increases. The Commission found that the announcement of future price increases not only signals the intended market conduct of the carriers, but also reduces the level of uncertainty about their pricing behavior, decreases their incentives to compete against each other, and increases the likelihood of coordination. Alleging a breach of Article 101 in the form of a by-object restriction of competition, the companies were obliged to offer Commitments to the Commission in July 2016 to avoid a fine.
- (39) It would hence be only a small step to apply Article 101 TFEU to scenarios of tacit coordination, to the extent that the above case did not yet create such precedent. This would let Article 101 entirely overtake the joint dominance concept under Article 102. In sum, there is only a very limited, if any, need for a concept of collective dominance under Article 102.

- **High risk of false positives and stifling innovation**

- (40) Second, it remains difficult to establish an abuse of collective dominance under 102 TFEU, even without having to prove “*the existence of an agreement or of other links in law*”. As mentioned above, tacit coordination, whereby competitors coordinate their behavior without

⁴¹ See for instance N. Petit, Re-pricing through disruption in tacitly collusive oligopolies: making sense of abuse of collective dominance law, DAF/COMP/WD(2015)52 at page 3, submitted in June 2015 in the context of the OECD Hearing on Oligopoly markets.

⁴² See Commission Case AT-39850 - Container Shipping; proceedings were formally opened in 2013, and the companies submitted commitments on 7 July 2016.

communicating or exchanging information with each other, is arguably the only behavior that Article 102 TFEU can meaningfully capture under the concept of collective dominance, without merely reproducing an Article 101 infringement (to the extent the latter does not yet cover such behavior in any event). The conditions for tacit coordination are typically more present in concentrated or oligopolistic markets, in view of the market structure in itself. However, the notion of tacit coordination is heavily criticized, and even the mere possibility of its occurrence in practice is often questioned⁴³.

- (41) Moreover, in particular in oligopolistic markets, it can be a thorny issue to apprehend whether a certain behavior stems from conscious parallelism (i.e. consciously acting in the same manner, amounting to tacit coordination) or from unconscious parallelism (i.e. acting economically rationally in a given market structure, without any type of coordination)⁴⁴. Since oligopolistic markets are not inherently non-competitive in the absence of coordination, and can in fact be effectively competitive in such cases, a finding of anti-competitive behavior should not occur unless tacit coordination is the only reasonable explanation for a certain behavior. To hold otherwise would be tantamount to accepting an enormous amount of Type I errors and resulting chilling effects on the market that will stifle innovation⁴⁵.
- (42) Surmounting the above hurdle was addressed in the *Airtours* criteria mentioned above. Its three cumulative conditions provide sound economic principles for establishing collective dominance. The fact that these criteria are rarely met is explained by the fact that it is rare to meet the conditions for joint dominance on a given market, and particularly its abuse.

- **Abuse of joint dominance is not an enforcement priority**

- (43) Finally, for all the reasons set out above, enforcing potential cases of abuse of joint dominance is clearly not an enforcement priority. This is most evident from the Commission’s 2009 Guidance Paper on its enforcement priorities in applying Article 102⁴⁶. Whereas the draft Paper – subject to a subsequent process of public consultation – contained a rather extensive overview of collective dominance based on the Court’s case law, the final Guidance Paper on the Commission’s enforcement priorities left this out entirely and simply stated that “*this*

⁴³ Ibid.

⁴⁴ See also F. E. Mezzanotte, “Using Abuse of Collective Dominance in Article 102 TFEU to Fight Tacit Collusion: The Problem of Proof and Inferential error”, *World competition Law and Economics Review*, Vol 33 issue 1, pp.77-102.

⁴⁵ Ibid., at page 87.

⁴⁶ OJ C 45, 24.2.2009, p. 7–20.

document only relates to abuses committed by an undertaking holding a single dominant position”.

- (44) Indeed, since then, the Commission has not brought any case based on the concept of joint dominance under Article 102 TFEU. As indicated above, this is more than compensated by the Commission’s efforts to stretch ever further the concept of an agreement or concerted practice under Article 101 TFEU.
- (45) Notably, most of the above points also apply to the assessment of collective dominance from an ex ante perspective, where the bulk of collective dominance case law has developed, i.e. in the context of the EU Merger Regulation. Given the continuing relevance of joint dominance in those cases, as well as the many parallels between the ex ante assessment of the market under merger control and NRA market analysis under the Regulatory Framework⁴⁷, it is worthwhile to briefly review the most essential case law in this regard.

B. Ex ante: joint dominance under the EUMR – safeguarding the evidentiary standard

- (46) While Article 102 TFEU and the EU Merger Regulation may serve different objectives (the former focusing on an undertaking’s illegal behavior, the latter focusing on preserving a market structure), the Court’s case law has nonetheless applied the same principles and thus the same legal test to establish joint dominance ex post and ex ante⁴⁸. This ensures a consistent and sound approach both from a legal and economic perspective. Given the disuse of joint dominance analysis under Article 102 TFEU, the Commission’s and Court’s approach under the EUMR has in particular offered some valuable guidance on the concept in recent years.
- (47) At the time of the emergence of the first joint dominance cases under Article 102 TFEU, the previous Merger Regulation (No 4064/89) was still in force. At that time, when assessing whether a proposed transaction should obtain the Commission’s clearance, the legal test consisted of verifying whether the concentration “*creates or strengthens a dominant position as a result of which effective competition would be significantly impeded in the common market*”⁴⁹. Dominance thus played a crucial role in merger control, and hence the utility of the notion of “collective” dominance, so as to broaden the Commission’s enforcement scope

⁴⁷ As the current SMP Guidelines indicate (§28 and §132), while in merger review market analyses are not conducted as periodically, both the Commission under the EUMR and NRAs under the Directives conduct an ex ante analysis whereby they aim to predict the future development of the market.

⁴⁸ See in this regard the Court’s reference to collective dominance cases under Article 102 TFEU when analysing merger-related decisions and vice versa.

⁴⁹ See Article 2 of Reg. 4064/89.

and capture situations whereby a merger would create or facilitate coordination between few market players without proof of the existence of a single dominant firm.

- (48) In this context, cases such as *Gencor*⁵⁰ and *Airtours*⁵¹ shaped the law on collective dominance for Article 102 purposes as well. In *Gencor*, the Court expansively established that parties in a tight oligopoly, under certain market conditions, may be able to anticipate one another’s behavior; thus, they are incited to align their conduct so as to maximize their profits by engaging in anticompetitive behavior, even without having structural links and without needing to enter into an agreement with each other (i.e. tacitly). In *Airtours*, this broadly-drawn approach was translated more structurally into three cumulative conditions, ensuring the Commission and national competition authorities with sufficient guidance to assess the potential for tacit coordination in an economically sound manner.
- (49) Along with the Merger Reform in 2004 (and new Regulation No 139/2004) came an altered test, assessing notified concentrations in relation to their ability to “*significantly impede effective competition*” and thus removing the necessity for the creation or strengthening of (joint or collective) dominance. Still, the Commission also issued a Guidance Paper on the assessment of horizontal mergers, which indicated that in concentrated markets, a merger may significantly impede competition by creating or strengthening a collectively dominant position, “*because it increases the likelihood that firms are able to coordinate their behaviour in this way and raise prices, even without entering into an agreement or resorting to a concerted practice within the meaning of Article 81 [101] of the Treaty*”. This is the so-called “coordinated effects” test, which virtually amounts to a modern collective dominance test under the EUMR, incorporating the *Airtours* conditions.
- (50) Importantly, the Court of Justice halted the General Court’s subsequent attempt to soften the cumulative *Airtours* criteria by stating that it is possible to indirectly establish collective dominance based on a number of indicative factors. In the *Impala*⁵² case, the Commission applied the *Airtours* test to clear a transaction between the world’s 2nd and 5th biggest record companies, given the absence of sufficient evidence to establish coordinated effects. The General Court endorsed a complainant’s claim that the Commission had acted erroneously. The GC conceded that the Commission has ample leeway when “*carry[ing] out a delicate prognosis as regards the probable development of the market and of the conditions of competition on the basis of a prospective analysis, which entails complex economic assessments in respect of which the Commission has a wide discretion*”. The GC subsequently

⁵⁰ See Case T-102/96, *Gencor Ltd v Commission* [1999] ECR II-753.

⁵¹ See Case T-342/99, *Airtours plc v Commission* [2002] ECR II-2585.

⁵² See Case T-464/04, *Independent Music Publishers and Labels Association (Impala) v Commission*, [2006] II-02289.

went further, stating that “*in the context of the assessment of the existence of a collective dominant position, although the three conditions defined by the Court [] in Airtours [] which were inferred from a theoretical analysis of the concept of a collective dominant position, are indeed also necessary, they may, however, in the appropriate circumstances, be established indirectly on the basis of what may be a very mixed series of indicia and items of evidence relating to the signs, manifestations and phenomena inherent in the presence of a collective dominant position*” (emphasis added).⁵³

- (51) This indirect test to establish joint dominance was introduced by the General Court *obiter dicta*. While not explicitly rejecting this indirect test, the Court of Justice quickly stepped in to prevent the seeming lowering of the evidentiary standard pursuant to *Airtours*, which was based on legally and economically sound principles and not to be tampered with. In the appeal of the GC’s *Impala* judgment⁵⁴, the Court of Justice clarified that “*it is necessary to avoid a mechanical approach involving the separate verification of each of those criteria taken in isolation, while taking no account of the overall economic mechanism of a hypothetical tacit coordination*”⁵⁵. In other words, no perfunctory check-list approach is permissible. Moreover, the mere finding of indicia pointing to a transparent market (i.e. the first *Airtours* condition) does not suffice: “*the assessment of, for example, the transparency of a particular market should not be undertaken in an isolated and abstract manner, but should be carried out using the mechanism of a hypothetical tacit coordination as a basis. It is only if such a hypothesis is taken into account that it is possible to ascertain whether any elements of transparency that may exist on a market are, in fact, capable of facilitating [] coordination and/or of allowing the competitors concerned to monitor sufficiently whether the terms of such a common policy are being adhered to*” (emphasis added).⁵⁶
- (52) Accordingly, the Court established an evidentiary tool for the Commission to take into account in its ex ante assessment, whereby it must assess the *Airtours* criteria under the hypothesis of tacit coordination on the relevant market and examine the concrete plausible strategies that competitors could adopt in order to tacitly coordinate⁵⁷. And while “*it is essential that such an investigation be carried out with care*”, the ECJ found that in this case, the General Court

⁵³ Ibid., at §251.

⁵⁴ Case C-413/06 P, *Bertelsmann and Sony* [2008] I-4951, para. 125.

⁵⁵ Ibid., at §125.

⁵⁶ Ibid., at §126.

⁵⁷ Ibid., at §129. Indeed, the Court requires a full-fledged analysis of the possible mechanism of coordination that could be used by the companies in question. See also T. Käseberg’s commentary on Case C-413/06 P, *Sony v Impala*, in the CLMR 2009, at p260.

“did not carry out its analysis of [the contested decision relating to market transparency] by having regard to a postulated monitoring mechanism forming part of a plausible theory of tacit coordination.”⁵⁸

- (53) The standard of proof forged by the *Airtours* criteria hence remains in place, i.e., such criteria must be assessed in light of an overall economic mechanism of hypothetical tacit coordination, not mechanically. The General Court’s suggestion for an indirect approach – to the extent it remains intact after the ECJ’s judgment– has to date never been tested by the Commission, which is very telling.
- (54) And quite to the contrary, the Commission is fully aware of the limits of the coordinated-effects based analysis and that broadening this concept could endanger the market (particularly in terms of chilling effects) and sound economic principles. Thus, the Commission has been careful to apply a coordinated-effects based analysis primarily to mergers and only to situations where the market was already prone to coordinated effects, rather than to situations whereby the proposed transaction would potentially create them⁵⁹.
- (55) This is reflected, for example, in the recent *Hutchison 3G Italy (H3G)/Wind*⁶⁰ merger, where the Commission extensively examined the horizontal coordinated effects on the retail market for mobile telecommunication services in Italy. Adhering to established case law, the Commission reiterated the *Airtours* criteria⁶¹. It then conducted an in-depth analysis of the market, assessing inter alia how the proposed transaction would affect the incentives of market participants to coordinate, whether and how reaching terms of coordination would be possible, whether coordination would be likely to be sustainable and whether the firms could follow any practices to facilitate coordination. Such analysis was undertaken in the context of the characteristics of the Italian retail mobile market, including its structural features and the past behavior of firms.

⁵⁸ Ibid., at §130.

⁵⁹ See for example in M.4980 *ABF/GBI Business* (2008), where the Commission combined the *Airtours* test with the *Impala* judgment requiring the examination of a mechanism of hypothetical coordination. In more recent merger cases such as M.7000 *Liberty Global/Ziggo* (2014) and M.7009 *Holcim/Cemex West* (2014) the Commission maintained this approach. Notably, these cases concern situations whereby the prospective transaction did not create the opportunity for coordinated effects on the market, but would rather cause a strengthening of such opportunity on a market already prone to coordination.

⁶⁰ M.7758 *Hutchison 3G Italy / Wind / JV* (2016).

⁶¹ See Ibid., at §956: “First, the coordinating firms must be able to monitor to a sufficient degree whether the terms of coordination are being adhered to. Second, discipline requires that there is some form of credible deterrent mechanism that can be activated if deviation is detected. Third, the reaction of outsiders, such as current and future competitors not participating in the coordination, as well as customers, should not be able to jeopardise the results expected from the coordination”.

- (56) The Commission observed the risks to the market of the proposed transaction: “*the reduction in the number of market players, particularly if – as in the present case – the market was already concentrated pre-merger and presents other characteristics that make it prone to coordination, may increase the likelihood of coordinated effects materialising*”⁶². In addition, “*the transaction would also remove from the market an important competitor as a standalone player, H3G*” and “*would increase symmetry among the remaining MNOs*”.
- (57) Moreover, the Commission found that H3G’s offers had disrupted the price equilibrium of the oligopolistic operators, as marked by historical parallel price increases. Indeed, “*the events described [] show that the Italian retail mobile market is prone to coordination and, in particular, that the three larger MNOs have been able in the past to take coordinated steps to reach a mutually acceptable (albeit temporary) price equilibrium. These events also show that coordination was not sufficiently stable over time.*”⁶³ As this lack of stability was mainly due to H3G’s aggressive tariffs, the Commission concludes that this situation would inevitably change post-transaction, with the disappearance of H3G as a fierce independent competitor and the more symmetric market structure resulting from the Transaction.
- (58) Subsequently, the Commission carefully examined the possible mechanism for coordination that could be used by the operators on the market post-merger, in line with the *Impala* judgment discussed above where the ECJ stated that “*tacit coordination is more likely to emerge if competitors can easily arrive at a common perception as to how the coordination should work, and, in particular, of the parameters that lend themselves to being a focal point of the proposed coordination*”⁶⁴. Finally, the Commission noted that coordination would be sustainable in view of different available deterrence and retaliation mechanisms, and found that the third *Airtours* criterion was fulfilled, given the lack of potentially successfully disruptive third parties. In this regard, the Commission had examined the position of mobile customers and new entrants.
- (59) Following the Commission’s comprehensive market analysis, it ultimately concluded that the proposed merger would significantly impede competition and obtained remedies from the merging parties to address its concerns.
- (60) Similarly, in *AB INBEV/SABMILLER*⁶⁵, the European Commission found that the proposed merger would result in coordinated effects by strengthening a joint dominant position in

⁶² Ibid., at §969.

⁶³ Ibid., at §1085.

⁶⁴ Case C-413/06 P, *Bertelsmann and Sony* [2008] I-4951, para. §123.

⁶⁵ M. 7881 AB INBEV / SABMILLER (2016)

several EU beer markets. The Commission first assessed the market conditions present on the beer market that made it particularly prone to coordination. Notably, it referred extensively to evidence of already-established past coordination, particularly in relation to previous Commission and NCA cartel decisions concerning major brewers (including AB INBEV). The Commission concluded on this basis that beer markets were prone to coordination⁶⁶, and that “*brewers have strong economic incentives to seek coordinated outcomes, whether through cartels or through tacit coordination*”⁶⁷. The Commission then conducted a thorough analysis of various other market characteristics rendering the market prone to coordination, such as the low price elasticity of the beer category)⁶⁸, and the documented and well-established tendency in the industry to follow a coordinated price leadership behavior.

- (61) After conducting this initial and thorough assessment, the Commission, as in *Hutchison*, turned to applying the *Airtours* test, ultimately finding that all three criteria were satisfactorily met⁶⁹.
- (62) The Commission concluded that the transaction, by increasing concentration and expanding the number of markets where the main players overlapped, would increase the risk of coordination and that such coordination was effective in raising prices. The Commission granted clearance following the parties’ commitment to divest large shares of the acquired business in Europe.

C. Conclusion: joint dominance is well-established in EU case law

- (63) The ECJ’s review of decisions adopted under Article 102 TFEU (abuse of joint dominance) and the EUMR (coordinated effects) has developed a rich body of case law offering a comprehensive overview of the concept of joint dominance and the criteria necessary for finding it. The three-prong test developed in the *Airtours* judgment is indisputably well-established. It has been consistently applied by the Commission and the Court in subsequent cases, combined with the evidentiary tool of the hypothetical mechanism of coordination described in *Impala*, without allowing for a lowering of the standard.
- (64) As the preferential tool for market intervention, competition law hence offers a satisfactory means of identifying and restraining companies holding a collective position of power, both ex post (countering an abuse of collective dominance under Article 102 or a concerted practice

⁶⁶ Ibid., at §64

⁶⁷ Ibid., at §65

⁶⁸ Ibid., at §66

⁶⁹ Ibid., at §§85-94

under Article 101) and ex ante (countering a transaction that may significantly impede competition through the creation or strengthening of coordinated effects on the market).

- (65) Indeed, the Commission has not hesitated to use these tools to enforce competition law both ex ante and ex post, and frequently in the telecommunications sector. In the ex ante context, and in line with ECJ precedent, the Commission has focused on those cases where the market already exhibited strong indications of coordination between market players, in order to ensure meeting the standard of proof for collective dominance. Indeed, particularly in the ex ante context, proper adherence to the standard of proof is fundamental. This is because such ex ante analysis requires authorities – based on mere predictions – to assess the future development of the market, and the risk for stifling false positives is significant.
- (66) Likewise, appropriate application of the standard of proof for collective dominance is crucially important in the context of the EU Telecommunications regulatory framework, where NRA market analysis is necessarily dependent on an ex ante assessment of the competitive situation that may call for imposing obligations. We discuss hereafter an overview of joint dominance as defined in the current regulatory framework serving as the basis for NRA market analysis, and its adherence to the concept of joint dominance under general competition law.

III. Joint dominance in the EU regulatory framework for electronic communications

- (67) As explained in this paper’s introduction, the EU Regulatory Framework for electronic communications seeks to progressively – as competition develops – reduce ex-ante sector specific rules as imposed by NRAs and to ultimately govern electronic communications by competition law only⁷⁰. Moreover, the Framework ensures consistency with competition law by insisting that concepts such as SMP are interpreted in line with both the concept of dominance under competition law and the case law of the General Court and the European Court of Justice in the context of Article 102 TFEU and the EUMR⁷¹.
- (68) Competition law is not only amply sufficient to serve this role, but also the preferential tool to deal with undertakings with significant market power. NRAs will intervene only when a thorough market analysis demonstrates that competition law is inadequate. Imposing ex ante obligations on SMP operators under the regulatory framework thus remains the exception to

⁷⁰ See Recital 28 of the Code.

⁷¹ See §24 of the SMP Guidelines: “*To ensure such consistency [with competition law], these guidelines are based on (1) existing case-law of the Court of First Instance [General Court] and the European Court of Justice concerning market definition and the notion of dominant position within the meaning of Article 82 of the EC Treaty [102 TFEU] and Article 2 of the merger control Regulation [EUMR]*”.

the rule. This exception must be applied with particular care, given the invasiveness of regulatory intervention on the market and the risks it entails. Indeed, it is generally agreed that the optimal approach is to exercise caution against identifying false negatives *ex ante*, as the remedy of competition law with its *ex post* toolbox remains available in any case without mistakenly stifling innovation.

- (69) Notwithstanding the above, the historical development of telecommunication markets in EU Member States, as typically characterized by the presence of only one national operator and a lack of competition, cannot be overlooked. In some of these markets, while it is on the right track, competition law is not yet sufficiently adequate to ensure a competitive market environment. This is where NRAs still play a needed role. Consequently, pursuant to the current regulatory framework and as maintained in the proposed Code, when competition law tools do not suffice, NRAs may impose *ex ante* obligations on operators to promote competition on their national markets. However, before any such market intervention can occur, NRAs must first conduct a market analysis and ascertain that such operator – or multiple ones – enjoys an SMP position on their relevant market.
- (70) The manner in which NRAs must conduct their market analysis and how they can establish SMP are set out in the current Framework Directive and the Commission’s SMP Guidelines. Both documents refer to the concept of joint SMP and to its joint dominance equivalence under competition law, including the guidance of the ECJ. However, successful applications of such concept by NRAs have been relatively few. Indeed, NRAs have imposed *ex ante* obligations on operators holding joint SMP only on a limited number of occasions, as noted by BEREC in its 2015 Report on Oligopoly Analysis and Regulation⁷². Many explanations exist on the paucity of joint SMP cases in the regulatory context – analogous to the scarcity of joint dominance cases under competition law. In particular, BEREC posits that more clarity may be needed on how NRAs should apply the concept of joint SMP⁷³.
- (71) Below is a brief overview of the definition of joint SMP in the current regulatory framework (A) and the analyses carried out by NRAs when finding joint SMP (B). Subsequently, NRAs’ infrequent findings of joint SMP will be explained. This is due to the confusion caused by the current framework’s text, which pre-dates several landmark ECJ cases on joint dominance, but also arises from other factors (C).

⁷² See *BEREC Report on Oligopoly analysis and Regulation*, published in December 2015, at page 5.

⁷³ *Ibid.*, at page 59.

A. Joint dominance in a regulatory maze: a codification of confusion

- (72) In assessing joint dominance, NRAs are currently required to take into account (i) the Framework Directive, including its Annex II; (ii) the SMP Guidelines; and (iii) relevant EU case law. As such case law developed more fully after the adoption of Framework Directive and SMP Guidelines, the consequent inconsistency is an obvious source of potential confusion.
- (73) In defining SMP, Article 14(2) of the Framework Directive provides that “*an undertaking shall be deemed to have significant market power if, either individually or jointly with others, it enjoys a position equivalent to dominance, that is to say a position of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers*”. This provision mirrors the ECJ’s definition of dominance established in landmark cases such as *United Brands*, which held that a dominant position “*relates to a position of economic strength enjoyed by an undertaking which enables it to prevent effective competition being maintained on the relevant market by giving it the power to behave to an appreciable extent independently of its competitors, customers and ultimately of its consumers*”⁷⁴. Moreover, as concerns joint dominance, the Framework Directive specifies that “*two or more undertakings can be found to enjoy a joint dominant position not only where there exist structural or other links between them but also where the structure of the relevant market is conducive to coordinated effects, that is, it encourages parallel or aligned anti-competitive behaviour on the market*”⁷⁵, and hence also covering potential situations of tacit coordination. This view of joint dominance is in line with European court cases such as *Gencor*⁷⁶ and *Compagnie Maritime Belge*⁷⁷.
- (74) Article 14(2) further specifies that when assessing whether two or more undertakings are jointly dominant, NRAs should act in accordance with EU law and take into “*utmost account*” the Commission’s SMP Guidelines (which came out a month after the Framework Directive). Article 14 (2) also refers to its Annex II, which sets out the “*criteria to be used in making such an assessment*”. These criteria consist of a list of six market characteristics, i.e. (i) low elasticity of demand, (ii) similar market shares, (iii) high legal and economic barriers to entry, (iv) vertical integration with collective refusal to supply, (v) lack of countervailing buyer power, and (vi) lack of potential competition. Shortly following the adoption of the Framework Directive, including this Annex II, *Airtours* established its cumulative three-prong

⁷⁴ See Case 27/76, *United Brands v Commission* [1978] ECR 207, at §65.

⁷⁵ See the Framework Directive, Recital 26.

⁷⁶ See Case T-102/96, *Gencor Ltd v Commission* [1999] II-753.

⁷⁷ Joined Cases C-395/96 P and C-396/96 P *Compagnie Maritime Belge Transports and Others v Commission* [2000] ECR I-1365.

test. Confusingly, the mere enumeration of the Annex II criteria in no way corresponds to this *Airtours* test. In fact, it seems to exemplify the refuted “checklist approach”, despite the fact that the Annex indicates that the six market characteristics are meant to be indicative, non-exhaustive, and non-cumulative.

- (75) The SMP Guidelines – published a month after the *Airtours* judgment in which the Commission was inter alia chastised for a mechanical application of market characteristics – attempted to reconcile the two approaches under *Airtours* and the Framework Directive. However, the outcome did not result in an ideal balance. Indeed, the Guidelines provide an even longer list of non-exhaustive and non-cumulative market characteristics that NRAs can assess “*without prejudice to the case-law of the Court of Justice*” (para. 97). At the same time, the Guidelines acknowledge *Airtours*, adding that “*while these characteristics are often presented in the form of the abovementioned list, it is necessary to examine all of them and to make an overall assessment rather than mechanistically applying a ‘check list’*” (para. 98).
- (76) Beyond the practical difficulties of implementing such juxtaposed criteria, the actual interpretation of the criteria set out in Annex II and the SMP Guidelines is similarly rather opaque. For example, the SMP Guidelines consider stagnant or moderate market growth as a market characteristic conducive to tacit coordination⁷⁸. However, this is contrary to the findings of the European Regulators Group for electronic communications (ERG), which served as an advisory group to the Commission until it was replaced by BEREC in 2002. Rather, the ERG considered that “*collusion in a situation with strong demand growth (frequently given in an early market stage) is more likely than in a situation with moderate growth*”⁷⁹. Such contrasting views emanate from Article 7 Commission decisions. In Case IE/2004/0121, increasing demand contributed to the Irish NRA’s finding of collective SMP in Market 15, whereas in Case HU/2004/0096, the Hungarian NRA found that the market players in Market 15 did not collectively hold a dominant position, since “*market demand in terms of minutes [had] increased by 66% in the past two years, and increase in demand over the next 2-3 years [was] likely*”. Another example concerns the criterion for low elasticity of demand, which the SMP Guidelines also consider as indicative of tacit coordination⁸⁰. Here again, the ERG’s view differed: “*demand elasticity is an ambivalent criterion in context of*

⁷⁸ Commission Guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services, 2002/C 165/03, § 97.

⁷⁹ The ERG, Revised ERG Working paper on the SMP concept for the new regulatory framework, ERG (03) 09rev3, September 2005, §29.

⁸⁰ SMP Guidelines, at §97.

*the assessment of joint dominance. Both a high as well as a low elasticity of demand can enforce collusion*⁸¹.

- (77) The inconsistency between these legislative texts and regulatory decision-making, which have set out different methods and criteria for joint dominance appraisal, undoubtedly created confusion in applying the joint dominance concept. NRAs have explicitly acknowledged such difficulties⁸² and, as shall be explained in more detail below, this has at times resulted in NRAs taking a formalistic approach to applying the doctrine, which often disregards the circumstances of individual cases and their dynamic evolution⁸³. Moreover, the seeming inconsistencies in methodology between the regulatory framework and key ECJ judgments such as *Airtours* and *Impala* may also explain why NRAs have faced difficulty in (correctly) applying the joint dominance concept in their market analyses. Avoiding further confusion in the new Code is thus of real importance.

B. Joint dominance in NRA assessments: the Commission as guardian of *Airtours*

- (78) After carrying out a market analysis, NRAs must notify the Commission, BEREC and the other NRAs of their intention to impose ex ante obligations on operators holding single or joint SMP. Such notification is pursuant to Article 7 of the current Framework Directive, as re-taken in Article 32 of the proposed Code. This notification mechanism, followed by a consultation, allows for a review of the market analysis and ensures consistency among the Member States of the regulatory framework's application. In this respect, the Commission, BEREC and other NRAs can provide comments during a one-month period. If the Commission considers that a draft measure notified by a NRA is contrary to EU law or creates a barrier to the Single Market, it begins an in-depth review lasting up to three months. It can then withdraw its reservations, issue a "veto" decision against the proposed measure, or issue a recommendation for amendment or withdrawal of the measure. The Commission's veto right, however, only applies to those results relating to market definition and market analysis, but not to those relating to remedies.

⁸¹ ERG Working paper, §30.

⁸² See for example Case NL/2015/1794, where the Dutch NRA had found collective SMP on the internet access retail market. After the Commission raised serious doubts as to this finding, the NRA subsequently withdrew its notification, and in particular its conclusion on the existence of joint SMP on the retail access market, due to "*too much uncertainty about the standard of proof in assessing joint dominance in a hypothetical situation of the market absent regulation and on a forward-looking basis.*"

⁸³ *Communications in EU Law: Antitrust Market Power and Public Interest*, Antonio BAVASSO, 2003, Kluwer Law International, p. 182.

- (79) Since the adoption of the Framework Directive and its Article 7 notification and consultation procedure, only nine draft measures notified by NRAs concerned the finding of joint SMP, and only four of these survived scrutiny by the Commission. Notably, these four accepted measures had not only closely applied the *Airtours* criteria, but also took into account cogent evidence on the basis of behavioral characteristics and pre-existing conduct on the part of the operators in order to establish collective SMP, despite the fact that NRAs are not required to undertake such an assessment in order to impose obligations. By contrast, in the other draft measures, NRAs lacked sufficient evidence to meet the required standard of proof, or followed an overly mechanical approach.
- (80) Such mistaken approach is most evident in Case UK/2004/0179, where the UK NRA Ofcom argued that Crown Castle and National Telecommunications Limited (NTL) held a jointly dominant position. Ofcom, however, based this view on simply a check-list review of the individual market characteristics set out in Annex II of the Framework Directive. The Commission rightly pointed out in its preliminary analysis that such review of isolated market characteristics, as opposed to an assessment of how the market functioned in practice, was inadequate to determine the existence of joint dominance⁸⁴. In particular, the Commission emphasized that when applying the appropriate empirical approach, it was highly questionable that the *Airtours* criteria were cumulatively met. Ofcom ultimately decided to withdraw and revise the draft measures, taking into account the issues raised by the Commission.
- (81) Inadequacy in demonstrating joint dominance is further reflected in these other rejected draft NRA measures:
- In Case FR/2005/0179, the French NRA ARCEP identified joint dominance held by three mobile network operators (Orange, SFR and Bouygues) on previous market 15. However, the Commission considered that the required standard of proof for establishing joint dominance was not met. The French Competition Authority also highlighted that while ARCEP had sufficiently demonstrated the first and third *Airtours* criteria, it remained questionable whether the second criterion had been fulfilled⁸⁵.
 - In Case MT/2007/0563, the Maltese NRA MCA identified joint dominance held by Maltacom and Melita Cable on the wholesale broadband access market in Malta. The Commission similarly found that the standard of proof was not met. In particular, it noted the lack of evidence in relation to the establishment of the collusive equilibrium, the

⁸⁴ See “First collective dominance cases under the European consultation mechanism on electronic communications”, Inge BERNAERTS and Stefan KRAMER, Competition Policy Newsletter, Number 2, 2005, p. 48.

⁸⁵ Avis n° 05-A-09, French Competition Authority, 4 April 2005, §59.

retaliation mechanism, and the absence of competitive constraints on the alleged tacit coordination.

- In Case SI/2008/0806, the Slovenian NRA APEK found that Mobitel and Si.mobil held a position of joint dominance on the wholesale market for access and call origination on public mobile telephone networks in Slovenia. APEK, however, failed to provide sufficient evidence in relation to the operators' incentives to coordinate, as well as their ability and incentive not to deviate from the coordinated outcome.
- Finally, in Case NL/2015/1727, the Dutch NRA found single SMP on the wholesale market for local access provided at a fixed location, and collective SMP on the retail internet access market. The Commission considered that the Dutch NRA had not sufficiently substantiated its assessment of a risk of joint dominance at retail level, especially in light of a finding of single dominance on the wholesale level. The Commission pointed *inter alia* to the fact that the Dutch NRA had not sufficiently demonstrated market transparency.

- (82) As is clear from the above, in each case, the Commission was appropriately strict in examining the evidence put forward by the NRAs, hence preserving the integrity of the three cumulative *Airtours* criteria and ensuring consistency between the concept of joint dominance under the regulatory framework and under competition law. This insistence on meeting the standard of proof developed by the ECJ is particularly important in view of the assessment's *ex ante* nature. An element of uncertainty is inherent to such types of assessment, while the possibility remains in case of Type II errors (or false negatives) to impose remedies *ex post*, both under national and EU competition law.
- (83) Turning back to the four successful Article 7 notifications, in these, NRAs identified joint SMP, as subsequently approved by the Commission. In these Cases IE/2004/0121, ES/2005/0330, MT/2006/0443 and IT/2006/0424, all manifested thorough economic analysis. Closely in line with the Commission's own approach in *ex ante* assessments of joint dominance under the EUMR, the NRAs' meticulous application of the *Airtours* criteria, including the criteria's interaction with one another, ensured meeting the high standard of proof⁸⁶.

⁸⁶ While inevitably differing in substance, the analyses examine each of the criteria comprehensively, often establishing the existence of some of them on both wholesale and retail levels, despite the fact that only the wholesale market needs to be examined in order to impose remedies on the (single or joint) SMP. For instance, Cases IE/2004/0121 and MT/2006/0443 identify a high level of transparency on both the wholesale and the retail level. Similarly, Cases IE/2004/0121, ES/2005/0330 and MT/2006/0443 examine in detail the existence of a potential retaliatory mechanism on both levels. The fulfillment of the third criterion was generally demonstrated by way of conducting a careful analysis of the lack of ability of (fringe) competitors to exercise any sort of constraint on the collectively dominant entity.

- (84) What is all the more interesting, however, is that most successful Article 7 notifications not only applied *Airtours* rigorously, but simultaneously accompanied the assessment of the three criteria with an analysis of behavioral characteristics of the operators concerned. Intrinsic to the preventive function of the ex-ante nature of the assessment of joint SMP by NRAs, and contrary to the Article 102 TFEU regime, is the fact that there is no need to establish abusive conduct on the part of the collective SMP operators in order to impose remedies. Thus, a number of Article 102 cases have been brought whereby collective dominance was identified, but no abuse was found⁸⁷, while the mere finding of collective SMP by NRAs is sufficient to impose remedies.
- (85) As explained *supra*⁸⁸, in competition law, a finding of infringement of Article 102 TFEU entails the finding of (i) dominance; and (ii) an abuse. While the assessment of conduct is not, in theory, required to establish dominance, given that the question of conduct is a matter for the assessment of abuse, in practice, conduct on the part of the undertaking(s) is nonetheless often taken into account in order to establish dominance, whether single or collective. Similarly, in an ex ante context under the EUMR, a conclusion pertaining to the risk that a merger will result in coordinated effects has often been supported by cogent evidence relating to the past conduct of the undertakings on the relevant market.
- (86) In light of these considerations, it is unsurprising that, while NRAs are in theory not obligated to assess conduct, in practice, they have adopted an approach whereby behavioral characteristics, in addition to structural characteristics, are nonetheless taken into account when establishing collective SMP. This is most apparent in Case IE/2004/0121, where the Irish NRA sought to base the finding on indicia of behavior in a context where structural conditions made joint dominance possible. Consequently, behavioral characteristics supporting the conclusion that Vodafone and O2 were tacitly coordinating were identified in the form of parallel price trends, a particularly elevated price level compared to other EU markets, identical and high levels of profitability, and a collective denial of access to wholesale airtime in the face of pent up demand for such services⁸⁹. Similarly, in Case ES/2005/0330, the Spanish NRA identified the existence of a tacit agreement to persistently refuse to grant network access in the presence of pent up demand, differing from other Member States where wholesale access had been voluntarily granted on a commercial basis.

⁸⁷ See for example Case T-193/02, *Laurent Piau v. Commission*, [2005] 5 CMLR 42; see also Décision n° 06-D-02, French Competition Authority, 20 February 2006.

⁸⁸ See *supra*, paragraph 32

⁸⁹ The decision was ultimately withdrawn by the Irish NRA in December 2005 after the three MNOs lodged an appeal with the Electronic Communications Appeal Panel. However, the initial findings of the decision are still relevant for the purposes of this paper given that the European Commission did not substantively object to the Irish NRA's main findings.

In particular, the NRA explained that it had received a number of complaints for alleged refusal to supply against all three MNOs. Finally, in Case MT/2006/0443, the Maltese NRA pointed to the fact that wholesale access negotiations with MVNOs had faced significant delays (16 months) for “*no apparent reason*”, hinting, once again, at denial of access.

- (87) It is notable that, despite the fact that a finding of collective SMP based on *Airtours* is in theory sufficient to impose remedies, the NRAs sought to also examine the conduct on the market on the part of those undertakings which they identified as holding collective SMP, prior to deciding to intervene. This approach should moreover be contrasted with findings of single SMP, where the analysis tends to rest on purely structural characteristics, with conduct not assessed to the same degree, if at all. This is due to the fact that, with respect to single SMP, the undertaking does not rely on the conduct of others to be able to leverage its SMP effectively, and there exists a presumption that a single SMP will engage in anti-competitive behavior. Conversely, in the case of collective SMP, there is more uncertainty around whether or not the operators holding collective SMP will abuse such dominance and, consequently, concrete evidence relating to behavioral characteristics and pre-existing conduct on the part of the operators found to hold collective SMP is warranted in order to rationalize intervention.
- (88) *Airtours* then seems to elaborate those first minimum conditions necessary for the finding of joint SMP, while further analysis of whether or not an abuse has occurred, or is likely to occur, is undertaken to justify intervention. This is indicative of an even higher evidentiary standard, and rightly so. Given the high risks of Type I errors by way of over-regulation, and the inherent uncertainty around whether or not joint SMP actually leads to an abuse, as opposed to single SMP, the step from an SMP finding to an application of ex ante regulation should be subject to rigorous empirical analysis.
- (89) While NRA application of the concept of joint dominance has not been abundant, as in the context of competition law, it appears that NRAs successfully imposed ex ante obligations on operators holding joint SMP when responding to the appropriate standard of proof. Such standard requires NRAs to conduct a careful and demanding market analysis, entailing a rigorous application of the *Airtours* test supported by cogent evidence pertaining not only to structural, but also behavioral, characteristics. This ensures that regulatory intervention only occurs when necessary, thus limiting the possible substantial harm to market development through erroneous intervention. Such approach is especially crucial in the context of oligopolistic markets, where it is difficult to distinguish coordination from competition and where mistakes are easily made.
- (90) The above suggests that the Article 7 notification and consultation procedure has served as a useful mechanism to ensure a consistent application of the law, both across Member States and also between the regulatory framework for telecommunications and its eventual

successor, general competition law. It is critical that such consistency continues in the context of the new regulatory reform.

C. Explaining the paucity of joint dominance cases in the telecommunication sector

(91) As indicated above, the inconsistency between the relevant regulatory texts and framework and the ECJ's case law, has resulted in confusion among NRAs when assessing the presence of joint SMP on their national telecommunication markets. Indeed, in five out of the nine cases where an NRA identified joint SMP, the Commission considered that the required standard of proof was not met, in particular as set out in the *Airtours* judgment. Such confusion may explain NRAs' erroneous application of the *Airtours* criteria, but it is not necessarily the direct cause of the relatively low number of joint SMP cases brought by NRAs. Indeed, a variety of other factors can explain the scarcity of such cases:

- **Conditions for joint dominance / tacit coordination are present only in very limited circumstances**

(92) Concentrated or oligopolistic markets are not inherently non-competitive in the absence of coordination, even in the case of "tight oligopolies" with only two or three significant competitors. This is an important distinction from monopolistic markets, which are not conducive as such to effective competition. Indeed, economic theory teaches that absent coordination, oligopolies can be effectively competitive and that pricing in oligopolistic markets can be entirely consistent with effective competition⁹⁰. BEREC also acknowledged this in its 2015 report on Oligopoly Analysis and Regulation⁹¹.

(93) For instance, mobile markets have been highly concentrated for years in most Member States, typically with only three significant operators in each national market. Nevertheless, unit prices have dropped dramatically⁹², along with operator revenues and EBITDA margins⁹³.

⁹⁰ See e.g. S. Bishop and M. Walker, *The Economics of EC Competition Law: Concepts, Application and Measurement*, Sweet & Maxwell 2010, p. 50, para. 2-042.

⁹¹ BEREC Report on Oligopoly analysis and regulation, BoR (15) 195, pp. 11 and 18.

⁹² See *European mobile network operator mergers: A regulatory assessment*, report by Frontier Economics for GSMA (December 2014), available at <https://www.gsma.com/publicpolicy/european-mobile-network-operator-mergers-a-regulatory-assessment>, which indicates that between 2004 and 2014, unit prices fell by 63% (p. 13).

⁹³ See e.g. Analysys Mason, "Mobile M&A in Europe: key considerations for investors' valuations", October 2015, according to which mobile operators' revenues in Europe have declined by 2.5% between 2010 and 2014, resulting in a 6 percentage points drop in EBITDA margin.

Fixed broadband retail prices have also declined, both for standalone offers and bundles⁹⁴. Member States known for their particularly concentrated fixed markets, such as Belgium and the Netherlands, are among the top countries in the DESI connectivity rankings and are leaders in Europe, both in terms of NGA coverage and fast broadband access take-up⁹⁵.

- (94) As economic principles have yet to establish any clear and coherent test to distinguish “good” from “bad” non-collusive oligopolies (to the extent such a distinction makes sense)⁹⁶, it is crucial to exercise great caution when aiming to intervene in an oligopolistic market. First, a thorough competitive analysis of such market must be conducted. NRAs are precisely required to do so when seeking to impose *ex ante* obligations upon market operators, and in doing so, they must adhere in particular to the cumulative criteria established in the *Airtours* test.
- (95) Unquestionably, this test is not easily met. However, this high standard has everything to do with its adequacy to capture only true situations of joint dominance. In this respect, BEREC agrees on the economic soundness of the *Airtours* criteria in determining joint dominance, and that NRAs must be able to put forward a coherent explanation of how coordination on the market is maintained – and the difficulties in sustaining such coordination – rather than an automated check-list approach⁹⁷. Accordingly, while NRAs may have satisfied *Airtours*’ criteria in only a limited number of cases, this is the consequence of several factors. The test is rigorous, and furthermore, pursuant to sound economic theory, it is only under limited circumstances that the conditions for joint dominance or tacit coordination are present on a given market (see *infra*).

- **Prioritization of competition law – ex post remedies are a permanent safety net**

⁹⁴ European Commission, *Europe’s Digital Progress Report 2017: Connectivity – Broadband market developments in the EU*, available at <https://ec.europa.eu/digital-single-market/en/news/europes-digital-progress-report-2017>, pp. 29 and 30.

⁹⁵ *Ibidem*, pp. 3, 8 and 14.

⁹⁶ See e.g. Bishop and Walker, *The Economics of EC Competition Law: Concepts, Application and Measurement*, Sweet & Maxwell, p. 340, para. 6-140: “[M]ost market outcomes that are consistent with firms engaging in tacit co-ordination are also consistent with those firms competing aggressively. For example, the parallel movement of prices over time is entirely consistent with firms competing aggressively against one another. One should therefore be extremely cautious in moving from a theoretical possibility to a policy proscription in which normal market conduct becomes subject to regulatory intervention. It is simply far too easy to construct a case in which tacit collusion is a possible outcome but being unable to rule out alternative competitive possibilities.”

⁹⁷ See BEREC response to the Public Consultation from the European Commission on the update of the SMP Guidelines (BoR (17) 115).

- (96) When NRAs adopt ex ante sector-specific rules, they actively intervene in the market based on a prospective analysis of how they anticipate the market’s evolution. As extensively explained above, the regulatory framework has permitted and codified this interventionist approach due to the historically non-competitive structure of telecommunication markets. However, this approach is an exception to the basic rule that market regulation should be limited to ex post remedies based on competition law tools.
- (97) In this regard, it is telling that the main markets on which NRAs previously conducted a joint SMP analysis (i.e. markets 15⁹⁸ and 18⁹⁹ of the first Recommendation on relevant markets susceptible to ex ante regulation) have since been withdrawn from the list. This is because these markets are now considered to be effectively competitive in most Member States, and in fact, virtually all Member States have deregulated them. Notably, the Spanish was one of the few NRAs that successfully imposed ex ante obligations based on a finding of joint SMP in its 2006 decision on market 15¹⁰⁰. It recently decided to withdraw these obligations, finding that the market no longer fulfils the “three criteria test”, in particular because of the sufficiency of ex post competition law¹⁰¹.
- (98) Indeed, competition law remains the preferred means of market intervention. On numerous occasions, the Commission and NCAs have enforced national competition law by establishing, ex post, single or joint dominance of operators active on the telecommunications market. Remedies under national and EU competition law thus offer a permanent safety net to deal with market situations where jointly dominant undertakings abuse their position to the detriment of consumers. Competition law has a clearly established track record of providing the necessary tools to address uncompetitive markets, but without the use of invasive – and at times highly distortive – ex ante regulation.

IV. Joint dominance in Economic Theory

A. The economics of tacit coordination

- (99) Joint dominance, as a matter of economics, occurs in an oligopolistic market when (i) no single firm has market power individually, but (ii) some oligopolists have such power when coordinating tacitly. We explain in this section that such joint dominance requires *prima facie* that such firms have the ability and incentive to tacitly coordinate. This assessment depends

⁹⁸ Market for access and call origination on public mobile telephone networks.

⁹⁹ Market for broadcasting transmission services, to deliver broadcast content to end users.

¹⁰⁰ Case ES/2005/330.

¹⁰¹ Case ES/2017/1965.

on the characteristics of the oligopolistic market where they operate, including its market structure. However, we also emphasize that even firms with the ability and incentive to coordinate may not manage to attain such a collusive equilibrium. This is why any finding of tacit coordination cannot arise from presumptions and must be based on concrete factual elements.

- (100) The economic framework for analyzing tacit coordination is provided by so-called repeated game theory, where repeated interactions allow firms to sustain supra-competitive prices¹⁰². The theory is anchored in economic models that explain how competitors, by employing a coherent system of implicit retaliatory threats, can cancel their mutual competitive pressure and sustain supra-competitive prices¹⁰³.
- (101) In a non-coordinated setting, each competitor has constant incentives to compete aggressively to gain market share to the detriment of its competitors in order to increase its profits. This incentive is ultimately what keeps prices low, and what prevents firms from jointly maximising their profits. In this setting, each firm has incentives to steal business from its rivals in order to maximise its short-term profits. In the longer term, however, this strategy is self-defeating since competitors will retaliate, and the ensuing price war will reduce long-term profits. It is repeated interaction that provides competing firms with long-term profits arising from sustained coordination, which can outweigh the short-term gains from undercutting their rivals. Firms interacting repeatedly in a market will come to understand that a price reduction is likely to trigger a price war which depresses long-term profits. Anticipating the retaliatory response of its competitors, firms operating in concentrated markets may find it optimal to depart from short-term profit maximisation and moderate their market share aspirations by setting relatively high prices. This is done without explicit communication or coordination, but merely through the tacit understanding of the long-term competitive implications of fierce short-term competition.
- (102) However, this form of tacit or implicit coordination can only be sustained under very specific circumstances. As set out *supra*, the necessary conditions that make tacit coordination possible and profitable for firms, as established by rigorous economic modeling,

¹⁰² Such a concern is specifically expressed in the European Commission's guidelines as regards information exchange regarding the potential of such exchanges to facilitate collusion in economic contexts where firms have repeated interactions (e.g. para. 74, para. 99 or example 4).

¹⁰³ Much of the theory of (tacit) coordination is derived from the work of G. Stigler, 'A Theory of Oligopoly' (1964) 72(4) *Journal of Political Economy* 44–61. For a more recent reference see, for example, M. Motta, *Competition Policy: Theory and Practice* (Cambridge University Press 2004) 141.

are contained in the *Airtours* judgment¹⁰⁴ (transparency, availability of a retaliatory mechanism, and absence of countervailing forces).

(103) In the following subsections, we will discuss the economic intuitions behind these conditions.

1. Transparency

(104) The first *Airtours* criterion pertains to transparency. Economically, transparency entails various elements concerning the undertakings' ability to (i) identify a common focal point on which competition is exerted, (ii) access information in relation to such common focal points.

- **Common Focal Point**

(105) First, in order to coordinate tacitly, firms must be able to arrive at a common focal point, i.e., a common understanding on what to coordinate and how to do so. In fact, in situations where coordination is feasible, there are usually multiple possible collusive scenarios (or “equilibria” in economics jargon). For instance, firms could increase prices by either 5%, 10%, or 15%. This raises the question of which collusive scenario the oligopolists will select, given that they do not communicate openly. Therefore, in order to coordinate tacitly, firms must select the same scenario, i.e. the supra-competitive price or other key features on which they compete and for which they would tacitly coordinate. Obviously, this is a difficult task, especially if there is no obvious “focal point”, such as a historical price level providing a benchmark for a tacitly coordinated price.

(106) Firms will typically differ in their choice of the optimal coordinated price, where they do not have the same costs, preferences or strategic goals. This is likely to be the case in most markets. For instance, ideas about the optimal level of prices in a market will probably differ between a very efficient firm with low costs and an inefficient firm with high costs. In general, the more symmetric the market (in terms of market shares of firms, product portfolios, costs, technologies or capacities), the more likely that tacit coordination will be sustained¹⁰⁵. Conversely, coordination is very unlikely in markets that are not sufficiently symmetric.

(107) Nonetheless, symmetry is not enough to reach a common focal point. This is because in the absence of explicit communication, firms may place greater emphasis on different

¹⁰⁴ Case T-342/99, *Airtours* [2002] ECR II-2585, para 62.

¹⁰⁵ *Ibid*, 147.

parameters on which they compete. This may lead to varying focal points for coordination, for instance by selecting prices (or levels of output) that are not jointly optimal for all firms and/or which are not consistent with each other¹⁰⁶.

- **Access to Information on Common Focal Point**

- (108) Another key feature of transparency relates to access to information concerning the focal point of the coordinated outcome. If such information is publicly available, there is an increased chance that the market can be considered as transparent and thereby apt to developing a common focal point.
- (109) In practice, access to information will depend on a market's objective structural features, such as price transparency, if the focal point relates to price. For example, in some markets, retail pricing information is transparent due to marketing in the media or price comparison tools available to end users. Conversely, in wholesale markets or in markets focused on high quality services e.g. business services, prices tend to be less transparent. This is due to the fact that firms in these markets typically make individual customized offers to end users. In this context, information exchange between competitors can increase transparency and facilitate coordination.

2. Availability of a retaliatory mechanism/Disciplining Mechanism – Monitoring

- (110) The second *Airtours* criterion is the presence of a retaliatory mechanism to ensure adherence to the coordinated behaviour over time. In this respect, it should be noted that the ability and incentive of firms to coordinate tacitly are determined by the trade-off between (i) the loss of long-term profit of continued coordination in case of deviation, and (ii) the potential short-term gains from deviating¹⁰⁷. This trade-off depends on the probability and timeliness of detection in case of a deviation, the severity of the expected punishment or retaliation, and the length of future interaction and hence the cost of sacrificing future collaboration.
- (111) A standard form of sustaining a coordinated price consists of using the threat of reverting to the competitive, short-term equilibrium price if any firm deviates from the course of conduct. This threat must be credible and effective in order to enable coordination. Firms therefore must be able to monitor deviations and, where needed, discipline each other by punishing

¹⁰⁶ M Motta, *Competition Policy: Theory and Practice* (Cambridge University Press 2004) 141.

¹⁰⁷ M Ivaldi, B Jullien, P Rey, P Seabright and J Tirole, 'The Economics of Tacit Collusion', 2003 Report to DG COMP, available at http://ec.europa.eu/competition/mergers/studies_reports/studies_reports.html.

deviations from the coordinated outcome¹⁰⁸. Such system of threats is needed because, as explained above, in the short-run a firm would always benefit individually from undercutting the supra-competitive price and stealing market share from competitors. In other words, firms have short-run incentives to deviate from the common course of conduct.

- (112) Tacit coordination can be more easily sustained when there is little to be gained from deviating from the focal point. The gains from deviating, in turn, will depend on the price-cost margin and demand elasticity of each firm on the market¹⁰⁹. If deviating would likely allow a firm to gain a large share of overall demand for a sufficient period of time, sustainable coordination would be improbable.
- (113) Similarly, tacit coordination is more likely to be sustained when, in case of deviation, there are large losses associated with retaliation. These losses will amplify, (i) the greater the difference between long-term coordinated profits and those obtained under unfettered competition and (ii) the higher the market transparency¹¹⁰. If deviations cannot be detected, because the market is not sufficiently transparent, then the likelihood of retaliation will be low. In such case, either coordination will break down or will only be sustainable at a price closer to the competitive price¹¹¹.
- (114) Similarly, increased information flows (transparency) between oligopolists naturally shorten detection lags. This increases the probability of detection, the effectiveness of the implicit threats that sustain coordination and, therefore, the likelihood of coordination¹¹².
- (115) Tacit coordination can thus emerge when the companies' short-run incentives to compete are overtaken by the long-term perspective of earning coordinated, supra-competitive profits. This also assumes that competitors also abide with the coordinated conduct under the same threat system.

¹⁰⁸ Case T-342/99 Airtours [2002] ECR II-2585, para 4.

¹⁰⁹ P Rey, Collective dominance and the telecommunications industry, in: *The Economist of Antitrust and Regulation in Telecommunications: Perspectives for the New European Regulatory Framework*, ed. P. A. Buigues and P. Rey, Cheltenham: Edward Elgar, 2004, Chapter 6.

¹¹⁰ P Rey, op cit.

¹¹¹ G Stigler, *The Organisation of Industry* (University of Chicago Press 1968) 42: "If the enforcement is weak, however – if price cutting is detected only slowly and incompletely – the conspiracy must recognise its weakness: it must set prices not much above the competitive level so the inducements to price-cutting are small, or it must restrict the conspiracy to areas in which enforcement can be made efficient." Information exchange may be understood as one way to achieve such "efficient" enforcement. See also Massimo Motta, *Competition Policy: Theory and Practice* (Cambridge University Press 2004).

¹¹² Ibid.

- (116) For this to occur, the market must be transparent and stable enough so that firms can monitor whether their competitors are complying or deviating from the coordinated outcome, and thus know when to retaliate.
- (117) The quantification of short-run incentives to compete, as opposed to the long-term perspective of earning coordinated, supra-competitive profits, is a function of various criteria. These include uniform or diverging market shares, the past roles played by certain market participants (e.g. acting as maverick), the nature of the product concerned (which may allow for some or little differentiation), and the number of participants in a position to collectively benefit from coordinated conduct.

3. Absence of Countervailing Powers/ External Stability

- (118) The third *Airtours* criterion entails the necessity of external stability to ensure the sustainability of coordination. Undercutting tacit coordination and destabilising the collusive equilibria may result from either firms not tacitly coordinating, but present in the market where coordination occurs, or from potential competitors that might enter the market in response to high prices.
- (119) The threat of market entry makes coordination less stable; thus, coordination is more likely in markets with high entry barriers. In the absence of entry barriers, newcomers can undercut supra-competitive prices, and therefore, the prospect of new market entrants makes deviation less costly¹¹³.
- (120) Therefore, for coordination to occur, the market must be such that third parties cannot upset any tacit coordination that may exist between a sufficiently large number of participants.
- (121) Also notably, strong countervailing buyer power makes coordination less likely to be sustained. Powerful buyers can increase competition between firms, and they provide incentives to deviate from the collusive equilibrium by threatening to switch to other sellers, by sponsoring new entry, or by starting their own production¹¹⁴.

4. Interactive Application of All Three Criteria

- (122) As was highlighted *supra*, the three-prong *Airtours* test should not be applied as a mechanical check-list. In fact, as well established in *Airtours*, and later confirmed in the *Impala* judgment,

¹¹³ P Rey, *op cit*, 93.

¹¹⁴ M Motta, *op cit*, 145.

these criteria must be examined in an integral manner. They represent cumulative conditions, i.e. it is enough that one fails for tacit coordination to be implausible.

(123) Consequently, an analysis of the application of these three criteria entails an interactive approach, whereby one inevitably impacts the other.

B. Necessary Conditions are Not Sufficient Conditions

(124) The *Airtours* conditions are necessary for the sustainability and profitability of tacit coordination. Where the *Airtours* criteria are met, a further question must be addressed before ex ante regulation is imposed, i.e., is the market in question *actually* experiencing tacit coordination or is there a *real likelihood* that tacit coordination is taking place? When the *Airtours* conditions are not met, there is a presumption that coordination is not likely to emerge. But, when these conditions are met, there should be no presumption that coordination is actually taking place or is likely to occur. In other words, these necessary conditions are not sufficient to demonstrate actual tacit coordination.

(125) We describe below how economic analysis can help in screening situations where firms are more likely to tacitly coordinate. Such analysis typically requires access to information on actual prices, costs and volumes. However, such assessment is far from fail-proof. It must necessarily be performed ex-post (i.e. once the market has operated for a sufficient period of time) and typically requires complex econometric methods. Consequently, it is very technically demanding and, therefore, is bound to produce false positives and negatives. For these reasons, competition authorities typically target firms' actions that make coordination more likely and that do not bring sufficient efficiencies to outweigh the risks for competition (e.g. anticompetitive exchanges of strategic information, the use of most favoured nation clauses in their contracts, or anticompetitive mergers and JVs), rather than attempting to condition or regulate the pricing strategies of firms enjoying a joint dominant position.

(126) In addition, ex-post information is particularly important in the context of directly assessing the likelihood of coordination. Various empirical tests have been developed in order to detect tacit coordination in a market. They mostly rely on counterfactual analysis and aim to establish that the evolution or distribution of market data is more consistent with coordination than with competition¹¹⁵. For instance, a price increase during a period of both decreasing costs and demand is more consistent with coordination than with normal competition. Economic and econometrics literature has developed several formal tests to apply in different

¹¹⁵ Knittel & Stango, Price Ceilings and Tacit Collusion, *The American Economic Review*, 93:5, 1706.

situations. Some examples of theoretical and empirical commentaries on cartel detection include Porter (1983)¹¹⁶, Ellison (1994)¹¹⁷, Porter (1985)¹¹⁸, Green & Porter (1984)¹¹⁹, Borenstein & Shepard (1996)¹²⁰, Bresnahan (1989)¹²¹ and Ivaldi et al (2003).¹²²

- (127) These tests could be used in two different ways. They may be performed only after the analysis of the market's characteristics has been completed, or they may be run before assessing the *Airtours* factors. Either way, antitrust agencies must complement the assessment of market characteristics with an ex-post analysis of actual market data, if they seek to target not only possible but likely coordination in a market.
- (128) Most of the studies listed above have found that market outcomes are more consistent with competition than with coordination. Given this, and to the extent that such findings could suggest that tacit coordination may be a rare phenomenon, the threshold should be high for intervention under a joint dominance theory of harm.
- (129) These tests use the evolution or distribution of market variables, such as prices and costs or demand, to estimate whether these observations are more consistent with coordination than with competition. Such ex-post factors may also take into account the manner in which transparency is affected on the market, including when information is lawfully exchanged between market participants, in accordance with market practices.
- (130) It stems from the above that the *Airtours* conditions are necessary but not sufficient conditions for finding tacit coordination. The theoretical and empirical economic literature has not identified a set of sufficient conditions for coordination to emerge, since some of the hurdles faced by tacit coordination do not depend on elements that are easy to directly observe. Empirical economists have developed ex-post tests to check whether actual market outcomes indicate the existence of tacit coordination. While these tests may be imperfect, it is

¹¹⁶ Porter, Robert H. "A Study of Cartel Stability: The Joint Executive Committee, 1880-1886." *The Bell Journal of Economics* 14, no. 2 (1983): 301-14. doi:10.2307/3003634.

¹¹⁷ Ellison, Glenn. "Theories of Cartel Stability and the Joint Executive Committee." *The RAND Journal of Economics* 25, no. 1 (1994): 37-57. <http://www.jstor.org/stable/2555852>.

¹¹⁸ Porter, Robert H. "On the Incidence and Duration of Price Wars." *The Journal of Industrial Economics* 33, no. 4 (1985): 415-26. doi:10.2307/2098384.

¹¹⁹ Green, Edward J., and Robert H. Porter. "Noncooperative Collusion under Imperfect Price Information." *Econometrica* 52, no. 1 (1984): 87-100. doi:10.2307/1911462.

¹²⁰ Borenstein, Severin, and Andrea Shepard. "Dynamic Pricing in Retail Gasoline Markets." *The RAND Journal of Economics* 27, no. 3 (1996): 429-51. <http://www.jstor.org/stable/2555838>.

¹²¹ Bresnahan, Timothy. F. (1989): Empirical studies of industries with market power, in *Handbook of Industrial Organization*, ed. by R. Schmalensee and R. Willig, Elsevier, vol. 2, chap. 17, 1011-1057.

¹²² Ivaldi, Jullien, Rey, Seabright et Tirole, "The Economics of Tacit Collusion", report for DG Competition, 2003.

nonetheless important to assess actual market prices; otherwise, there is a high risk of incorrectly finding coordination or joint dominance. This implies that finding joint dominance in emerging markets, where by definition there is no history on which to base ex-post assessment, is bound to be problematic and lead to error very often.

C. Application to the Telecoms Sector – Likelihood of Coordination

(131) In light of allegations of joint dominance in the telecom sector, this section assesses whether this sector has specific features that would make joint dominance more likely than elsewhere, and then discusses optimal regulation in this context.

1. Likelihood of coordination

(132) Mobile and fixed telecom markets in the EU tend to be perceived as concentrated, with fewer and fewer firms enjoying dominant positions. That being said, while this may be true in some countries, no generalizations can be made in this regard.

(133) This situation has raised concerns about joint dominance and tacit coordination, which explains the EU Parliament's efforts to clarify the conditions for finding collective dominance in the ECC.

(134) Certain features of telecom markets can facilitate coordination:

- a. High entry barriers related to network access or spectrum scarcity in the telecom sector translate into a relatively low number of undertakings competing in certain markets. This increases the risks of possible coordination, even in the presence of high market growth¹²³.
- b. Price transparency, as prices are generally publicly available, except for custom made offers to high corporate users.
- c. A certain degree of commonality of costs resulting from the use of similar equipment and the application of similar interconnection conditions.

(135) Nonetheless, despite many allegations of collective dominance in EU telecom markets, the available evidence gives no particular indication that telecom operators are more likely to tacitly coordinate than firms in other industries¹²⁴. For example, as mentioned *supra*,

¹²³ P Rey, op cit, 31.

¹²⁴ N Petit, N Neyrinck, Collective dominance: An overview of national case law, 13 October 2011, e-Competitions Bulletin Collective dominance, Art. N° 39129

following liberalization, markets for mobile services around the EU have proven to be intensely competitive and innovative, which is inconsistent with tacit coordination. Further market developments, such as the transition towards the 5G network will likely result in more competitive pressure on incumbents¹²⁵.

- (136) Furthermore, there are a number of features of the telecom markets that make coordination unlikely in general. As explained in the previous sections, firms are therefore likely to have diverging interests. In this context, reaching a (common) focal point is particularly difficult. This is all the more so considering the importance of economies of scale in the field of electronic communications services which incentivizes all operators to gain market shares. Operators' incentive to compete is further stimulated by the fact that they are asymmetric in size, market share and business model
- (137) Moreover, uncertainty related to changes in technology and business models also make coordination particularly difficult. A changing environment is first a challenge to coordination as it requires constant adjustments of the focal point. Second, the difficulty to monitor the actual cause of changes in profits hinders detection of deviations and ultimately makes coordination less stable.
- (138) Finally, operators often try to gain a modicum of market power through product differentiation (e.g. in fixed markets, by adding additional services to bundles such as e-mail, web hosting, video-on-demand etc.). In such circumstances of differentiated product markets, competition does not focus on price alone but takes place along multiple dimensions, and coordination becomes more difficult to reach.

2. Analysis of the Costs of Type I and II Errors in Ex-ante Regulation

- **An Error-Cost Approach**

- (139) It is impossible in practice to distinguish with certainty between pro-competitive and anti-competitive behaviors. Any legal rule or standard, and any actual ruling or decision, could lead to errors. Some strategies and actions could be deemed anticompetitive when they are in fact welfare-enhancing and vice versa. Legal rules and standards should therefore be designed according to an error-cost framework, as pioneered by Judge Frank Easterbrook for antitrust

¹²⁵ GSMA contribution to the public consultation on the review of Significant Market Power, 26/06/2017, p. 21.

and as discussed in particular by Evans and Padilla (2005) for unilateral abuses¹²⁶¹²⁷. In this context:

*“Socially desirable antitrust rules would minimize the expected cost of errors resulting from condoning harmful practices or condemning beneficial ones, while maintaining a degree of predictability for businesses and administrative ease for the courts.”*¹²⁸

(140)As briefly touched on above in the legal section, there are typically two types of errors. Public authorities may intervene in a market and impose remedies against firms that were behaving competitively. Such *false conviction* is often referred to as a Type I error. Public authorities could also fail to intervene, even though prices are supra-competitive as a result of anti-competitive actions. These *false acquittals* are often referred to as Type II errors. Both types of errors are very closely linked, and reducing the risk of one type of error by modifying the intervention threshold or the legal standard will generally lead to increasing the risk of the second type. The choice of legal standard should thus be guided by the expected probabilities of making Types I and II errors. It should also depend on the costs associated with both errors.

(141)It is generally acknowledged that the costs of Type I errors are generally much larger than the costs of Type II errors, as explained, for instance in Evans and Padilla (2005):

“The costs of false convictions in antitrust decisions involving unilateral practices are likely to be significantly larger than those of false acquittals. As Judge Easterbrook has observed, “There is no automatic way to expunge mistaken decisions of the Supreme Court. A practice once condemned is likely to stay condemned, no matter its benefits. A monopolistic practice wrongly excused will eventually yield to competition, though, as the monopolist's higher prices attract rivalry.” This overstates the case: bad decisions do get expunged or worked around, and monopolies can slow their eventual destruction sometimes through anticompetitive methods (for example, the De Beers diamond cartel) and sometimes through the political process (for example, AT&T). But there are sound economic reasons to believe that the cost of prohibiting efficient practices outweighs the costs of perpetuating monopolies.”

(142)While this statement is already true in relation to decisions in a competition law context, it is even more so with respect to regulation. When competition agencies fail to intervene to redress harm stemming from anticompetitive conduct, consumers and competitor behavior can reduce the magnitude of this harm. When regulatory agencies fail to intervene adequately,

¹²⁶ Frank H. Easterbrook, *The Limits of Antitrust*, 63 Tex L Rev 1, 9-14 (1984).

¹²⁷ Evans, David S. and Padilla, A. Jorge (2005) "Designing Antitrust Rules for Assessing Unilateral Practices: A Neo-Chicago Approach," *University of Chicago Law Review*: Vol. 72 : Iss. 1 , Article 5

¹²⁸ See Evans and Padilla (2005), already quoted.

this does not deprive competition agencies of the ability to do so. Competition agencies, for instance, have often intervened in margin squeeze cases in regulated industries.

(143) Therefore, regulatory agencies should only intervene when the expected costs of Type I errors are very limited and when there exist very significant costs associated with Type II errors, despite the possibility of ex-post intervention with competition law tools. If the costs of Type I intervention are significant or the costs of Type II errors are limited, regulation should be avoided.

- **Evolution of the Costs of Regulation over Time**

(144) In a situation where a market is dominated by former state owned monopolies that inherited their infrastructures (as was the case during the early telecommunications liberalisation period), the risk of committing Type I errors may be limited in cases of unilateral exclusionary abuses. However, Type II errors would lead to the persistence of market power and, in most cases, to de facto monopolies. In the absence of regulation, customers and competitors have very limited means to mitigate the consequences of this market power, and this situation can be very damaging to consumers for a very long period of time.

(145) The main costs associated with Type I errors are that actors anticipating regulation will reduce or forego their investment. These costs are arguably small for the incumbents who inherited their infrastructures from state monopolies, as regulation and liberalization could not have been anticipated then. Because of this, the balance of Type I and Type II errors may favor regulation in the case of early telecom firms who enjoyed a single dominant position protected by network barriers to entry.

(146) In 1996, the first access regulatory package was designed accordingly. The goal of regulation was twofold. It first aimed to mitigate market power in the short run by setting price ceilings on prices to final customers. Second, and more importantly, it aimed at fostering entry by new players, for instance by creating wholesale markets at various levels of the value chain. Actors could therefore establish a customer base initially as simple resellers of a downstream wholesale offer and then invest to be active on upstream markets as well¹²⁹. Thus, the original access regulatory framework was strongly weighted towards regulation (when SMP was automatically triggered by a 25% market share), and this framework well-served consumers and new entrants' access needs.

¹²⁹ This is the so-called ladder of investment approach. For a critical review of this policy see Oldale, A. and Padilla, J., 2004. From state monopoly to the "investment ladder": competition policy and the NRF. LECG Europe, The Pros and Cons of Antitrust in Deregulated Markets, in "Swedish Competition Authority," 51-77.

- (147) However, over time, even incumbents started to invest in their infrastructures, so the situation slowly evolved. The prospect of regulation started to impact firms' investments. Easy access to incumbents' infrastructure can undermine the incentives to invest in infrastructure both for incumbents and for new entrants who can rent existing infrastructure from incumbents instead of investing in their own infrastructures. Incentives to invest in infrastructure are a key concern for policy-makers in promoting facilities-based competition, i.e. entrants investing in their own infrastructure, rather than relying on regulated access to incumbents' infrastructure.
- (148) The potentially adverse impact of access regulation on investment was documented by Grajek and Röller (2012)¹³⁰. In this paper, the authors investigated the trade-off between access regulation and investment in network industries. They showed that while lower access prices can increase competition in the short term, they risk undermining incumbents' incentives to invest. They demonstrated empirically that this risk is not a mere theoretical possibility but one that can have material implications on the level of investment.
- (149) Commitment to regulate in a proportionate manner and only when necessary is therefore extremely important in this context. This has been well-understood in modern regulation. Therefore, since 2002, it is accepted that regulation should not unduly interfere with competition. This is why SMP was clearly limited to situations of clear-cut single dominance, and NRAs refrained from unduly regulating oligopolies based on joint dominance.
- (150) Today, the telecom sectors are more competitive than ever. There is competition between various operators both for mobile and fixed networks and services. The key difference between today's situation and the early days of liberalization lies in the fact that in today's world, competition has contributed to a significant improvement of quality of services and price decrease in the interest of consumers (to the point where the regulation of retail services is no longer effectively applied). Conversely, competition between operators (whether mobile or fixed) is fierce, and operators must make significant investments to keep up with technological changes.
- (151) The issue of commitment to adequate and proportionate regulation described earlier is even more relevant in the context of joint SMP. First, where no one holds a historical dominant position, such as in mobile markets, all firms were at an equal footing to invest. Second, in a healthy competitive environment, firms will compete in the investment in quality and will all ultimately have very attractive infrastructures. This will make these infrastructures very appealing for third parties, and there is a reversed causality: infrastructures are good because

¹³⁰ Grajek, Michał, and Lars-Hendrik Röller. "Regulation and Investment in Network Industries: Evidence from European Telecoms." *The Journal of Law & Economics* 55, no. 1 (2012): 189-216. doi:10.1086/590136.

competition is intense. By then forcing access to these high quality infrastructures, this would be focusing on the most competitive markets and not on the problematic ones.

- (152) Accessing third parties' infrastructures is a substitute to building its own infrastructure. As already mentioned, granting access to incumbents' infrastructures was initially necessary, such that entrants could climb the "investment ladder". This policy was always meant to be a first step towards infrastructure competition, not an end in and of itself. By implying that it would consider access regulation more easily, Regulatory Agencies would be sending the message that they are focusing less on infrastructure competition. This is likely to reduce all firms' investments very significantly, especially in markets that are the most competitive and where firms are forced to invest massively because their competitors also do so. Instead of investing themselves, firms could adopt a free-riding strategy whereby they would wait for their competitors to build high quality infrastructures and then request access at the most favorable regulated conditions possible.
- (153) This is a particular concern as investments in infrastructures in the recent past have been very significant. According to the European Parliament, across the OECD, investment in telecommunications amounted to as much as US\$209 billion in 2008 and declined to approximately US\$180 to 190 billion annually in the three subsequent years¹³¹. Overall, despite the financial crisis, the investments remained significant.
- (154) In the US, from 2007 to 2012, between US\$603 and US\$546 per household was invested annually in the telecommunications sector. During the same period, investment in Europe has been lagging behind as annual investments per household ranged between US\$389 and US\$244.
- (155) However, considerable investments must still be made if the EU is to reach 100% coverage at 30 Mbps and 50% take-up at 100 Mbps by 2020. The Commission estimates that an investment of €180 to €270 billion will be required to meet the Digital Agenda broadband targets¹³².

¹³¹ European Parliament (2015) Broadband Infrastructure: supporting the digital economy in the European Union, European Parliamentary Research Service, PE 565.891, September 2015.

¹³² Broadband Commission for Digital Development (2014) Broadband for all: the state of broadband, ITU/Unesco.

- (156) According to McKinsey & Company (2012), upgrading the fixed telecoms infrastructure in the EU-15 to achieve fiber-to-the-home coverage of around 50% of all households and vector-based VDSL will require around €200-250 billion¹³³.
- (157) Revamping Europe's mobile infrastructure to create a single mobile network using LTE technology and covering 95% of the EU-15 population, which forms part of the Commission's digital agenda, would take another €50-70 billion (estimates from 2012)¹³⁴.
- (158) The European Commission estimates that delivering Gigabit Internet Connectivity by 2025 will require an overall investment of c. €500 billion.¹³⁵ In addition, the Boston Consulting Group BCG estimates that the infrastructure upgrade needed to achieve the Gigabit Society targets would cost €660 billion if delivered exclusively via a fiber-to-the-premises approach¹³⁶. This includes €360 billion for ultrafast broadband, €200 billion for 5G RAN and €100 billion for low-latency proximity data centers.
- (159) These investments can only be threatened by the prospect of undue regulation, which directly reduces the expected profitability of these investments. If investments are less profitable, firms will end up investing less. It is important in this context to describe the consequences of a smaller investment. Firms will not stop investing in fiber or wireless technology altogether. However, they could invest less in hardware and redundancy, which would effectively lead to slower connection speed and a larger proportion of failed connections. Firms would also spread their investments over a longer time period. Last and most importantly, firms would not deploy their technologies to less densely populated areas. Undue regulation on joint dominance grounds would also lead to more grey areas. The consequences of undue regulation therefore conflict with other key objectives of regulatory agencies, and regulators must wisely weigh their objectives when deciding to intervene against alleged joint dominance.
- (160) Moreover, contemporary undue regulation reduces the current cash flow of telecommunication companies. The very large investments that are currently needed in Europe will require that telecom companies have good access to financial markets. Such

¹³³ F. Grijpink, S. Newman, S. Sandoval, M. Strandell-Jansson & W. Torfs (2012) A New Deal: Driving investment in Europe's telecom infrastructure, McKinsey&Company , No. 21 Recall.

¹³⁴ Ibid.

¹³⁵ EC Communication on Connectivity for a Competitive Digital Single Market – Towards a European Gigabit Society (2016), p8, these estimates include very high-capacity networks and 5G connectivity.

¹³⁶ W. Bock & M. Wilms (2016) Building the Gigabit Society: an inclusive path toward its realization, Amsterdam: The Boston Consulting Group.

- access will be more difficult if regulation reduces their current cash flows (in addition to increasing uncertainty on future cash flows, which further restricts the ability to issue debt).
- (161) Economic literature in the last decade has clearly linked cash flow and the ability to invest, as further discussed below. The main reason behind this is that capital markets are imperfect. As a consequence of agency problems and information asymmetries, firms may fail to obtain funds for profitable projects by issuing debt or equity.
- (162) Decision-makers within borrowing firms may have incentives to overstate investment prospects or to use the funds provided in a way that does not maximize the return on the investment¹³⁷. The problem then emerges either when investors cannot fully distinguish between good and bad companies or when they cannot monitor the actions of a firm's managers. As a result of these inefficiencies, a company may be less able to obtain capital, or the shares would have to be sold at a premium¹³⁸. Similar mechanisms have been described for debt markets¹³⁹.
- (163) Concerning the substantial and consistent body of empirical literature confirming that cash flow has a positive and statistically significant influence on investment, the below studies are illustrative¹⁴⁰.
- (164) Fazzari, Hubbard and Petersen (1988)¹⁴¹ analyses the statistical relationship between cash flow and investment for two sets of manufacturing firms: (i) firms with easy access to capital markets and (ii) firms with more restricted access. The sensitivity of investment to cash flow is statistically significantly different from zero for both groups of firms, although it is higher for the group of firms that is most likely to face external finance constraints.

¹³⁷ See, for example, R.G. Hubbard (1996), "Capital-market imperfections and investment", *Journal of Economic Literature*, 36.

¹³⁸ See Fazzari, S.M., R.G. Hubbard and B.C. Petersen (1988), "Financing constraints and corporate investment", *Brooking Papers on Economic Activity*, 1.

¹³⁹ See Stiglitz, J.E., and A. Weiss (1983), "Incentive effects of terminations: applications to the credit and labor markets", *American Economic Review*, 73; and Jaffee, D.M., and T. Russell (1976), "Imperfect information, uncertainty, and credit rationing", *Quarterly Journal of Economics*, 90. For further literature on inefficiencies in capital markets, refer to Asquith, P., and D. Mullins (1986), "Equity issues and offering dilution", *Journal of Financial Economics*, 15; Stein, J. C. (2003), "Agency, information and corporate investment", *Handbook of the Economics of Finance*.

¹⁴⁰ For a detailed survey see Hubbard, R.G. (1998), "Capital-market imperfections and investment," *Journal of Economic Literature*, 36. This paper was already referred to at footnote 51 of the Form CO.

¹⁴¹ See Fazzari, S.M., R.G. Hubbard and B.C. Petersen (1988), "Financing constraints and corporate investment", *Brooking Papers on Economic Activity*, 1.

- (165) Many subsequent studies have tested this relationship and obtained similar results. While Fazzari, Hubbard and Petersen (1988) used dividend payments to identify firms with easy access to capital, Gilchrist and Himmelberg (1995) classified firms as constrained when they are small, have no bond rating, or no commercial paper program¹⁴². Worthington (1995) showed that the effect of cash flow on investment is greater for durable goods industries and for industries with high sunk costs¹⁴³. Other studies that confirmed the relationship between cash flow and investment include Hoshi, Kashyap, and Scharfstein (1991)¹⁴⁴ and, more recently, Bloom, Bond and van Reenen (2007)¹⁴⁵.
- (166) The literature has also dealt convincingly with a fundamental problem arising from the fact that a firm's cash position may itself reflect information about its investment opportunities. For example, Blanchard, Lopez-de-Silanes and Shleifer (1994) showed that firms' acquisition activities respond to large cash windfalls from legal settlements unrelated to their ongoing lines of business¹⁴⁶.
- (167) Compass Lexecon illustrated in an econometric analysis of telecoms firms that a company's cash flow ratio is significantly associated with an increase in the investment ratio.
- (168) Specifically, an increase in the cash-flow ratio by 10 percentage points (“pp”) is associated with an increase in the investment ratio of 3.8pp to 4.5pp, after controlling for the impact of differences in investment opportunities on firms' investment behavior.
- (169) The data analyzed concerned individual publicly traded companies in the telephone communications industry over the period 1990-2012, as drawn from Thomson One¹⁴⁷. The econometric model follows the standard econometric model developed by Fazzari, Hubbard and Petersen (1988)¹⁴⁸.

¹⁴² See Gilchrist, S., and C.P. Himmelberg (1995), “Evidence on the role of cash flow for investment”, *Journal of Monetary Economics*, 36.

¹⁴³ See Worthington, P.R. (1995), “Investment, cash flow and sunk costs”, *Journal of Industrial Economics*, 43(1).

¹⁴⁴ See Hoshi, T., A. Kashyap and D. Scharfstein (1991), “Corporate structure, liquidity and investment: Evidence from Japanese industrial groups”, *Quarterly Journal of Business and Economics*, 106.

¹⁴⁵ See N. Bloom, S. Bond, and J. van Reenen (2007), “Uncertainty and investment dynamics”, *Review of Economic Studies* 74.

¹⁴⁶ See Blanchard O.J., F. Lopez-de-Silanes, A. Shleifer (1994), “What do firms do with cash windfalls?”, *Journal of Financial Economics*, 36.

¹⁴⁷ <https://www.thomsononeim.com>

¹⁴⁸ Fazzari, S., Hubbard, G. and B. Petersen (1988), “Financing Constraints and Corporate Investments,” *Brookings Papers on Economic Activity* 1.

(170)The model that Compass Lexecon estimated is the following:

$$\left(\frac{I}{K}\right)_{it} = a_i + bQ_{it} + c\left(\frac{CF}{K}\right)_{it} + \varepsilon_{it}$$

where

- a. $(I/K)_{it}$ is the investment ratio of firm i in year t , where I captures capital expenditures, and K is start-of-period property, plant and equipment.¹⁴⁹
 - b. $(CF/K)_{it}$ is the cash-flow ratio of firm i in year t .
 - c. Q_{it} is the Tobin's Q of firm i in year t , i.e. the ratio of the firm's market value to book value at the start of the year.
- (171)The analysis aims to quantify the parameter c , which measures the change in the investment ratio of a firm (in pp) when its cash-flow ratio increases by 1 pp. The control variables employed are Tobin's Q , to control for the investment opportunities of a firm, and year and firm fixed effects.
- (172)The coefficient of interest is positive and significant in the OLS and IV specifications estimated. When excluding firms in financial distress, the effect estimated is of a slightly higher magnitude.
- (173)Robustness checks performed include the analysis of a sub-sample of observations with cash-flow ratios within the 10th and 90th percentiles, the analysis of a sub-sample of observations with cash-flow ratios within the 25th and 75th percentiles, the analysis of a sub-sample of observations with capital above €100 million, the analysis of a smaller sample of non-financially distressed firms and, finally, the analysis of the whole sample, including country fixed effects in the specification. In all robustness checks, the coefficient of interest proves positive and statistically significant.
- (174)There is therefore very strong and robust evidence that cash flow has a causal impact on the ability and incentive of telecom companies to invest. Thus, regulation that limits cash flow unduly will have negative investment effects.

- **Regulation in a Modern World**

(175)The question to be addressed at this stage is whether, under current market circumstances, there is a need to phase out regulation or to delineate it differently. In the case of oligopolies,

¹⁴⁹ The reason why investment and cash flow are divided by capital is that firms in the sample are of very different sizes; the ratios are used to normalize.

as indicated above, excessive regulation is likely to stifle investment and innovation (as operators need to recoup their investments, and if they fear undue regulation, these firms will effectively invest less), while it is unlikely to promote market entry (since the markets are already characterized by the presence of several operators). The costs of undue regulation, i.e. of the Type I error, are therefore likely to be very high in the case of oligopolistic markets. It will chill investment and be detrimental to consumers in the long run.

- (176) At the same time, there is no reason to believe that tacit coordination is more likely to emerge in the telecom sector than in any other sector of today's economy. Moreover, there are also no reasons to believe that the harm stemming from unaddressed tacit coordination in the telecom market is greater than in any other sector of the economy. While the existence of non-replicable infrastructures inherited from the past was a clear specificity of the telecoms sector, which naturally called for regulation, this is no longer the situation, where three to four market players compete based on infrastructures that they privately funded.
- (177) Overall, there seem to be very limited grounds for specific rules in the telecom sector with respect to tacit coordination.
- (178) Moreover, given that the specificities of the telecom sector with respect to tacit coordination seem limited, there is a risk that inappropriate rules, de facto lowering the standard for reaching a presumption of joint dominance, would eventually be generalized to all sectors of the economy.
- (179) This seems to have happened in Israel. The Restrictive Trade Practices Law defines a "concentration group" as "a limited group of persons conducting business and possessing a concentration of more than half of the total supply or acquisition of an asset or provision or acquisition of a service"¹⁵⁰. The competition authority can instruct members of the concentration group to take steps preventing harm, or risk of significant harm, to the public or to competition, such as:
- a. Ordering the removal of barriers to entry resulting from actions or omissions of group members;

¹⁵⁰ The conditions for defining a concentration group are that: (i) there is limited competition (or conditions for it) between members of the group or within the sector; (ii) regulating the activities of this group can prevent harm or risk of harm to the public or to competition in the sector. Limited competition can be characterised by the presence of barriers to entry and additional factors, such as switching barriers, similar market shares of group member, homogenous products / services provided by group members, large number of customers / suppliers, and transparency of terms of contracts between group members and customers / suppliers.

- b. Instructing to cease a certain activity by group members if it facilitates collusion;
- c. Forbidding the transfer or publication of information that would facilitate collusion;
- d. Instructing to divest shares / sale assets owned by group members in other firms in the sector.

(180) Overall, the Israeli competition agency can now impose very far reaching remedies on the basis of a relatively light initial assessment¹⁵¹. If it uses this tool widely, this would likely lead to many Type I errors, the costs of which could be significant. However, it is important to note that the competition agency cannot go as far as imposing price or access regulation.

- **Choice of Optimal Policy for Regulatory Intervention**

(181) As explained earlier, the choice of optimal policy for regulatory intervention should be guided by the risks and costs of both Type I and 2 errors. We have established that the costs of Type I errors in the telecom sector are, currently, likely to be very large, and particularly so with respect to joint SMP. We have also discussed that the risks of regulatory Type II errors are limited to situations that could not be remedied by ex-post competition tools. These situations are, as already explained, likely to be rare. The costs of Type II errors are also likely to be more limited because ex-post enforcement is likely to be better informed and as efficient in redressing almost all problematic situations.

(182) As discussed earlier as well, the likelihood of Type I errors in assessing joint dominance are generally rather high, given that the conditions that are relevant for the emergence of tacit coordination are not all directly observable. However, this risk can be significantly reduced based on a careful ex-post assessment of market outcomes using adequate econometric techniques.

Regulating jointly dominant firms – emerging markets vs. existing markets

(183) *Emerging markets.* If a regulatory agency seeks to regulate jointly dominant firms in an emerging market, such an ex-post assessment is impossible. However, in an emerging market, even only the classical ex-ante assessment based solely on the *Airtours* criteria would be very challenging. It is rather difficult to see how one could determine that the characteristics of a prospective market are prone to coordination. All such characteristics are unknown (e.g. expected market shares of players, their symmetry, their costs, the transparency in the market,

¹⁵¹ It is important to notice that the competition agency can only intervene against facilitating practices and cannot impose price or access regulation.

the existence of a focal point, the stability and reliability of demand). The assessment would therefore be very speculative and, ultimately, very imprecise. The risks of Type I error will be maximal. Emerging markets are also markets in which firms have invested recently and are possibly currently investing heavily. Therefore, the costs of Type I error are also likely maximal. In our framework, these are cases where regulation is too costly and mostly likely to lead to consumer harm.

- (184) *Existing markets.* In view of the above, the regulation of jointly dominant firms should only be envisaged for existing markets. In these markets, an assessment based on ex-post evidence is likely to be more informed and more targeted, limiting Type I errors.
- (185) In this respect, particularly illustrative are the examples of ARCEP and CMT, which sought to intervene against alleged collective refusal to supply access (as detailed in Appendix 1 of this report). Many good reasons exist for market players to unilaterally refuse access to their infrastructures. The fact that such scenario occurs in a market having certain characteristics, and where coordination could possibly be sustained and profitable, is certainly not a reason to presume that coordination is the most likely explanation for what could be purely unilateral behavior. In this context, only ex-post information can possibly allow limiting the probability of Type I errors.
- (186) In the case of ARCEP's claim, it seemed to lack elements that would enable distinguishing whether the refusal was of a unilateral or coordinated nature. Intervention in this case would then be misguided. On the contrary, if the CMT could indeed demonstrate that the refusal was coordinated in nature, intervention would be necessary.
- (187) In any case, the best remedy for coordination is to bring the firms back to competitive behavior and not to merely regulate the consequences of coordination. As explained earlier, in many instances, firms' coordination is fostered and stabilized by certain communications that infringe competition law. In the context of these very specific communications between companies, the appropriate tool is competition law, as it can impose remedies in relation to both past and future behavior and ensure deterrence in other markets.
- (188) Regulatory action is required only when it is established that likely coordination is not related to any competition infringement. In markets where joint dominance is suspected, a joint assessment by regulatory and competition agencies would be particularly welcome. Regulatory agencies have the sectoral expertise, while competition agencies have experience in ex-post investigations and a superior knowledge of what is likely to be a competition infringement. If no competition infringement is found, given that purely legal tacit coordination is unlikely, regulatory agencies should first question the reliability of their initial findings and only intervene when they have understood the mechanism through which tacit coordination occurs.

- (189) When coordination is likely and yet not fostered or stabilized by a competition law infringement, it could still be destabilized by regulatory actions. Certain structural parameters clearly favor coordination, such as symmetry, commonality of costs, or cross ownership. Regulations can lead to more or less symmetric market structures, or more or less steady market evolutions. For instance, when regulation imposes access costs, this increases the commonality of costs between companies, which then increases the likelihood that coordination will emerge downstream.
- (190) Some information exchanges of strategic data also clearly facilitate coordination. Regulators also often impose the disclosure of information. They often publish recommendations, such as price ceilings, cost benchmarks or performance indicators. There might be efficiency reasons associated with such disclosures. However, such information could sometimes facilitate coordination as well¹⁵². If regulatory agencies are concerned about coordination, they should review to what extent various public policies foster or destabilize coordination. They could also use their regulatory powers to prohibit practices that are not viewed as competition infringements, but which could facilitate coordination, such as “cheap talk,” for example.
- (191) Remedies ordinarily used for single dominance should only be envisaged when coordination is not a competition infringement and cannot be destabilized by regulation. However, these remedies are likely to come at a very high cost. First, regulation will likely remain in place for a very long period of time. Second, regulation of access or price regulation might help create focal points in other markets by increasing transparency and cost commonality. Therefore, the regulation of one market might lead to coordination in an adjacent or downstream market, which must in turn be regulated. A situation could unfold whereby all the telecom markets, down to the final customers, must be regulated, in perpetuity. This would be a colossal step backwards in terms of effective regulation.

D. Conclusions

- (192) Tacit coordination can occur when long-term profits from sustained coordination outweigh the short-term gains from undercutting competitors. This is possible because short-term price competition is often fierce, and firms interact with each other repeatedly. However, tacit coordination is only possible if a number of necessary conditions are satisfied. Because these conditions may not be fulfilled, we expect tacit coordination to be challenging, which may explain why we observe many explicit cartels. Furthermore, those necessary conditions are

¹⁵² See for instance S Albaek, P Mollgaard and B Overgaard, ‘Government-Assisted Oligopoly Coordination? A Concrete case’ 4(1997) Journal of Industrial Economics 429.

not sufficient: tacit coordination may fail to exist even in markets where all necessary conditions for tacit coordination hold, which supports the need for cogent evidence to support a finding of joint dominance.

- (193) The theoretical and empirical economic literature has not identified sufficient conditions for tacit coordination. This is because some of the hurdles faced by tacit coordination do not depend on observables. Empirical economists have developed ex-post tests to check whether actual market outcomes indicate the existence of tacit coordination. These tests are necessary to assess actual market prices; otherwise, the risk is high of incorrectly finding joint dominance.
- (194) These ex-post tests can be implemented by antitrust authorities or regulators. The need to use ex-post information to establish the existence of a joint dominant position limits the scope of regulation and in particular renders the use of ex-ante regulation in emerging markets extremely difficult. Competition agencies and regulators must focus their efforts against tacit coordination on prohibiting actions and strategies that facilitate coordination in the first place, as opposed to regulating price and non-price competition.
- (195) The telecom sector generally does not appear to differ from any other sector of the economy as far as tacit coordination is concerned. Thus, it would appear wise to stay as close as possible to common rules and not create special presumptions that would initially only apply to the telecom sector, but would likely soon be generalized to many other sectors.
- (196) For these reasons, we consider that there is no economic justification for adopting a tighter regulatory framework in connection with collective dominance in the EU telecom markets than the one that already exists. This does not mean overlooking the risk of tacit coordination. However, in our opinion, a proper and rigorous application of the *Airtours* test, which remains the right test, should be maintained as the appropriate standard, as supported by cogent ex-post evidence relating to market structure and actual conduct. In addition, it should be noted that ex-post competition rules generally allow for a better informed judgment than regulation and are as efficient to destabilize likely coordination.
- (197) Granting regulatory agencies the privilege of specific presumptions that firms are tacitly coordinating, without establishing hard evidence supporting this idea, is likely to give rise to many very damaging and unnecessary regulations. Moreover, by applying price regulation or imposing access regulation to firms suspected of coordination, regulatory agencies would effectively be abandoning the objective of restoring and introducing effective competition in markets, which has been their main mandate and their main success in the past decades.
- (198) Therefore, the following optimal policy is advocated. Regulatory and competition agencies would assess whether joint dominance in fact exists in the market concerned, by way of applying the three-prong *Airtours* test. Then, any regulatory intervention on the market would

be justified on the basis of competition concerns, with concrete ex-post data. If no infringement of competition is found, regulatory agencies should first review their prior that firms are coordinating, as the likelihood of legal tacit coordination is in general very limited. If intervention is still desired, regulators should first aim at restoring the conditions of competition, before imposing classical regulatory measures that could prove costly and, most likely, ultimately counterproductive.

V. Joint dominance in the new Code: an opportunity to ensure consistency and legal certainty

(199) When in September 2016 the European Commission published its proposal for a new European Electronic Communications Code, it had made no alterations to the provisions dealing with joint dominance as codified in the current Framework Directive. The only change it did propose was the – long due – removal of Annex II of the Framework Directive, which, as explained above, has been one of the main sources of confusion in the establishment of joint SMP. The Commission had already planned this repeal in 2007, based on the consideration that *“since the list in Annex II is neither necessary nor exhaustive, it may be misleading for national regulatory authorities conducting market analysis. Furthermore, the concept of joint dominance also depends on the case law of the European Court of Justice.”*¹⁵³

(200) The removal of Annex II of the Framework Directive, coupled with the repeated insistence on the conformity of joint SMP with the concept of joint dominance under competition law as developed by the ECJ, already brings some light into the previously obscure web of criteria enshrined in different legislative documents. While the Commission heard loudly and clearly the calls for further clarification of the concept of joint SMP – some stakeholders also opportunistically seeing this as a way of broadening the concept, and broadening NRAs’ powers to intervene on the market – it however consciously decided not to insert additional text into the Code.

(201) The reason for this can be read in its Evaluation of the regulatory framework for electronic communications – a document accompanying the proposal for the Code – in which it stated that, notwithstanding the voiced concerns on oligopolistic market structures, *“it should, however, be kept in mind that oligopolistic market structures in network industries are likely, and in certain cases efficient, market outcomes. They are also the result of the market*

¹⁵³ See Recital 42 of the Commission’s proposal for a Directive of the European Parliament and of the Council amending Directives 2002/21/EC on a common regulatory framework for electronic communications networks and services, 2002/19/EC on access to, and interconnection of, electronic communications networks and services, and 2002/20/EC on the authorisation of electronic communications networks and services 13 November 2007.

*liberalisation over the past twenty years. As criteria for such a new intervention threshold are difficult to establish, the risk of overregulation and further regulatory fragmentation would not be negligible, with consequential effects on predictability for investors*¹⁵⁴. Indeed, “*many operators warn of the risk of over-regulation if ex ante regulation tools are broadened, without a clear economic underpinning, to tackle oligopolistic conditions beyond the current joint dominance test [] or beyond the current threshold for applying symmetrical rules*”¹⁵⁵. This perfectly reflects the fear that any lowering of the current evidentiary standard to establish joint dominance would entail a dangerous risk of Type I errors, and may lead to erroneous regulatory intervention which stifles market development.

(202) To the extent that a further clarification of the concept of joint dominance is nevertheless warranted in the new Code, beyond the mere repeal of Annex II, its consistency with competition law, sound economic policy and with the overall regulatory framework is indispensable. This is all the more important given that – despite the Commission’s efforts to review proposed measures by NRAs in the context Article 7 of the Framework Directive – it concedes that there is a lack of consistency in the regulatory approaches taken at national level, which “*results to a certain degree from the institutional set-up and the way the various institutional players (i.e. mainly the national regulators, BEREC and the European Commission) interact and can influence the regulatory outcome*”¹⁵⁶. Though the Commission has a veto right on measures proposed by NRAs as concerns market definition and market analysis (albeit not as concerns remedies), this is an exceptional tool and typically the Commission rather offers recommendations, from which NRAs – not always compliant therewith – can deviate. As the Commission has pointed out, such inconsistency has a profoundly negative impact, affecting legal certainty and hence the predictability and attractiveness of the telecom sector to institutional investors who are willing to invest in such market¹⁵⁷.

(203) At the parliamentary stage of the Code’s legislative process, under the pressure of various stakeholders who insisted on the inclusion of further guidance on the concept of joint dominance, additional wording has been added in Article 61. Based on the draft Code as it stands in July 2017, Article 61 now also provides that:

Two or more undertakings may be found in a joint dominant position, even in the absence of structural or other links between them, when the market

¹⁵⁴ See the Commission Staff Working Document, Evaluation of the regulatory framework for electronic communications, published on 14 September 2016, at page 55.

¹⁵⁵ Ibid., at page 127.

¹⁵⁶ Ibid., at page 57.

¹⁵⁷ Ibid., at page 58.

structure enables them to behave to an appreciable extent independently of competitors, customers and ultimately consumers. This is likely to be the case where the market exhibits a number of characteristics such as:

- a. a high degree of concentration,*
- b. a high degree of market transparency providing incentives for parallel or aligned anti-competitive behaviour,*
- c. the existence of high barriers to entry,*
- d. the foreseeable reaction of competitors and consumers would not jeopardise parallel or aligned anti-competitive behaviour.*

National regulatory authorities shall evaluate such market characteristics in the light of relevant principles of competition law while taking into account the specific context of ex ante regulation and the objectives set out in Article 3.

(204) Unfortunately, as is apparent, the newly inserted text – contrary to everything that has been urged for above – is likely to be highly detrimental for several reasons.

(205) It will create a **high degree of legal uncertainty**. First, while arbitrarily cherry-picking market characteristics from Annex II of the Framework Directive and from the SMP Guidelines, the opportunity to get rid of any remnants of the refuted check-list based approach has entirely been foregone. Second, though the draft text compels NRAs to evaluate the listed market characteristics in light of the relevant principles of competition law, the text fundamentally abnegates these principles. In fact, rather than finally bringing in line the regulatory framework with competition law – and in particular incorporating the *Airtours* test which constitutes the core of the establishment of joint dominance – the text disconcertingly bears reference to only two of the *Airtours* criteria, and in fact seems to alter the well-established case law of the ECJ by adding other criteria and creating a new test, without any economic basis. It is highly probable that if these criteria are kept in the Code, they will generate a high degree of inconsistent regulatory interventions. Third, the proposed wording leaves entirely unclear the status of these enumerated market characteristics. Is their establishment sufficient for a finding of joint SMP? Is the list exhaustive? Must they be established cumulatively?

(206) Allowing a finding of joint dominance based on random criteria, rather than requiring a consistent and thorough analysis based on the *Airtours* case law **is also countercyclical**. The purpose of the various amendments to the regulatory framework over the past 20 years has been to move away from automatic or easy regulation (which was justified at times when the priority was to promote competition and NRAs were less concerned with the risks of the impact of their investment on existing competition and investments). The very purpose of the

2002 regulatory package was to enable NRAs to weigh regulatory intervention against the need to promote existing competition and investment in new technologies. The proposed wording which is purported to facilitate a finding of joint dominance by NRAs goes in the opposite direction of what the regulatory framework has tried to achieve of the past years.

- (207) Finally, the proposed wording appears to be going **against sound economic policy**. While there is a theoretical case for attempting to tackle tacit coordination, it is critical that the regulatory threshold for intervention take due account of the existing level of competition on the market and do not stifle investment. Since electronic communications markets have now been liberalized for several decades, the primary goal of regulation is to ensure that markets continue to be competitive, while at the same time, the operators present in the markets continue to have the incentive to invest. Allowing regulators to find SMP in instances where markets are actually competitive will have the effect of discouraging investment and stifling innovation. It is therefore critical that the criteria used for a finding of joint dominance be narrowly tailored to instances where it is certain that oligopolistic markets are not competitive. This means a strict reliance on the criteria developed by the ECJ in the *Airtours* cases, applied with the right level of scrutiny for the underlying evidence of anticompetitive conducts.
- (208) In sum, the text as proposed above enhances the current state of inconsistency and uncertainty and hence worsens the situation, while the reform constitutes the perfect and long-awaited opportunity to instead improve the regulatory framework. For the sake of legal certainty – crucial for a sane regulatory environment which in turn ensures a sane market environment – and for the sake of legal consistency – which provides that joint dominance must be applied in conformity with competition law – we therefore strongly urge to revise the proposed wording. In order to foster market development, market investment, and market innovation, operators need to be able to trust in the fact that the assessment of their position as (singly or jointly) dominant will occur in a consistent manner, whether ex ante or ex post, and whether by NRAs, NCAs, the European Commission or the European Courts.
- (209) As BEREC rightfully states, not only are the *Airtours* criteria for establishing joint dominance economically sound, they also constitute the right framework for such assessment in the context of the imposition of ex ante obligations by NRAs¹⁵⁸. Any clarification on the concept of joint dominance in the Code should once and for all incorporate these well-established criteria. We therefore suggest that the above draft text be replaced by the following:

In particular, national regulatory authorities shall only conclude to the existence of a joint dominance position when the three following cumulative

¹⁵⁸ BEREC Report on Oligopoly analysis and regulation, BoR (15) 195, at page 60.

conditions, considered as a whole and in light of an overall economic mechanism of hypothetical tacit coordination, are met:

- a. First, the market must be sufficiently transparent for all members of the dominant oligopoly to be able to properly monitor whether the rules of coordination are being observed.*
- b. Second, the situation of tacit coordination must be sustainable over time, that is to say, there must be an incentive not to depart from the common policy on the market.*
- c. Third, the foreseeable reaction of current and future competitors, as well as of consumers, must not jeopardize the results expected from the common policy.*

(210) This text is consistent with the European Court of Justice's jurisprudence in *Airtours* and *Impala*, and ensures conformity of the NRAs' approach with the approach of the European Commission and Courts under competition law, both in ex ante and ex post situations. When eventually the day comes that sufficient competition has been developed on the electronic communications markets, rendering sector-specific ex ante regulation unnecessary, the same test shall continue to apply consistently through the enforcement of general competition law.

*

*

*

APPENDIXES

Appendix 1: Past regulatory initiatives

- (1) There have been several initiatives of telecoms national regulatory agencies who claimed that telecom operators enjoyed a collective dominance. These cases have mostly been referred to the European Commission by National Regulatory Authorities (NRAs) in the electronic communications sector.
- (2) The existing case law shows that cases of tacit coordination (or joint dominance) are very rare in practice, even if all the *Airtours* criteria are satisfied. The number of national decisions in the EU on collective dominance remains low, ranging between 3 cases in 2005 and 2006 to a peak of 13 cases in 2007.¹⁵⁹ Below we discuss several of the most pertinent cases.

Ofcom Review of the Market for Broadcasting Transmission Services 2005

- (3) The UK regulator argued that the two companies (Crown Castle and NTL) operating terrestrial networks were not competing effectively. Ofcom distinguished a market for Managed Transmission Services (MTS) as a downstream market to the market for access to masts where Crown Castle and ntl granted each other access. The market analysis, which was accepted by the Commission, pointed towards market characteristics rendering coordination possible: high concentration (two main operators), barriers to entry, symmetry in market shares, comparable cost structures of Crown Castle and ntl, structural connections between the firms, low demand elasticity and slow demand growth.
- (4) Yet the Commission judged the evidence insufficient to prove likelihood and sustainability of coordination and criticized Ofcom for not establishing the focal point for coordination. The Commission also pointed out that some market features would make coordination difficult, particularly the lack of transparency in pricing. Moreover, the Commission pointed out that the broader functioning of the MTS market, beyond the observed characteristics, was not as likely to facilitate coordination.¹⁶⁰ Interestingly, in its final decision, Ofcom stated that it “does not believe that there is a realistic possibility that SMP is held by more than one company in the access markets considered” since the networks of the two network operators have “no practical overlap”.¹⁶¹

¹⁵⁹ Nicolas Petit, Norman Neyrinck, Collective dominance: An overview of national case law, 13 October 2011, *e-Competitions Bulletin Collective dominance*, Art. N° 39129.

¹⁶⁰ I Bernaerts & S Kramer, First collective dominance cases under the European consultation mechanism on electronic communications, *Competition Policy Newsletter*, 2/2005.

¹⁶¹ Ofcom (2005) Broadcasting Transmission Services: a review of the market, Final statement, 28 April 2005, available at: https://www.ofcom.org.uk/__data/assets/pdf_file/0022/53860/mastsites.pdf, para. 4.5.

ARCEP case FR/2005/0179

- (5) The French NRA notified the Commission that the three main Mobile Network Operators (MNOs) jointly hold a dominant position due to the concentrated market structure, common interest in denying access to mobile networks, high degree of market transparency, high legal barriers to entry and no countervailing buyer power. ARCEP identified the denial of network access at wholesale level as the focal point for coordination and showed the existence of effective retaliatory and deterrence mechanisms.
- (6) The Commission did confirm the existence of effective deterrence and retaliatory mechanisms, but it disagreed with ARCEP's analysis by pointing out that the analysis was incomplete, not including all possible scenarios, and actual market data was missing to definitely establish joint dominance. The Commission also found that while coordination could potentially have been sustained between two MNOs, it was much more difficult between three players, as argued by the NRA. Consequently, ARCEP withdrew its notification.¹⁶²

CMT case ES/2005/0330

- (7) The Spanish regulator notified the Commission of a case of joint dominance by three mobile operators Telefonica, Vodafone and Amena based on similar factors as those presented by ARCEP (see above). CMT argued that the similarity of cost structures of the three operators implied market symmetry, despite differences in market shares. Again, it was the denial of access to the network that was deemed to be the focal point for coordination and retaliatory mechanisms were identified at wholesale level as well as a possibility of a price war at retail level in case of deviation. The NRA also expressed doubts about possibility of market entry, given that there was a fourth operator that was not active on the market at the time of review.
- (8) The Commission commented that data at retail level was insufficient and requested additional information on price trends, profitability measures, retaliatory mechanisms and wholesale demand. Only with this additional *ex-post* information, the Commission adopted the regulator's market analysis of joint dominance and accepted the draft measures proposed by CMT.¹⁶³
- (9) Importantly, following several other cases of collective dominance brought forward by the Spanish regulator (in 2012 and 2014), the NRA has decided to deregulate the mobile

¹⁶² BEREC Report on Oligopoly Analysis and Regulation, BoR (15) 195, p. 67.

¹⁶³ BEREC Report on Oligopoly Analysis and Regulation, BoR (15) 195, p. 41, 88.

wholesale access and call origination market in Spain as of September 2017, removing the *ex-ante* obligation to provide access at reasonable prices.¹⁶⁴

- (10) The invoked cases show that tacit coordination is very rare, even in markets where the theoretical conditions are satisfied. Moreover, they demonstrate that in order to establish the existence of joint dominance, the regulators must rely on *ex-post* evidence – a point on which we already elaborated.

¹⁶⁴ GSMA contribution to the public consultation on the review of Significant Market Power, 26/06/2017, p. 16

Appendix 2: Econometric analysis of the impact of cash-flow on investments in the telecom sector

Introduction and Summary

- (1) This paper presents the results of an econometric analysis of the relationship between cash flow and investment in the telecommunications industry. This relationship is very well established by a large body of standard corporate finance literature. Inter alia, that literature includes a number of empirical studies that analyse the relationship between cash flow and investment. The consistent finding in that literature is that firms that generate more cash invest more.
- (2) This section presents further empirical evidence applying standard econometric techniques – developed and applied in the literature discussed in the main text of this report – to quantify the statistical relationship between a firm’s cash-flow ratio (cash flow divided by the firm’s capital) and its investment ratio (investment divided by capital) based on a sample of 170 telecommunications firms over the period from 1990 to 2012.
- (3) We find that an increase in the cash-flow ratio by 10 percentage points (“pp”) is associated with an increase in the investment ratio of 3.8pp to 4.5pp. This is after controlling for the impact of differences in investment opportunities on firms’ investment behaviour.
- (4) These results are statistically significant and robust to variations in the specification of the econometric model and the sample of firms analysed. This confirms that the ability of telecommunications companies to invest in profitable business opportunities increases with the cash flow that they generate.
- (5) We first present the data. Then, we present the econometric analysis and the results. The last sections focus on robustness checks.

Data

- (6) We have used data on individual telecom firms over the period 1990-2012 drawn from Thomson One,¹⁶⁵ which reports financial information for a large number of companies. We selected publicly traded companies in the “telephone communications industry”.¹⁶⁶
- (7) We extracted data on the following variables:
 1. Capital expenditure (“investment”);

¹⁶⁵ <https://www.thomsononeim.com>

¹⁶⁶ The selected firms include those classified by Thomson One as firms belonging to the “telephone communications industry” (primary SIC code 4813). The list of firms is reported in Annex 1.

2. Net cash flow from operating activities (“cash flow”);
 3. Property, plant and equipment (“capital”);
 4. The ratio of each firm’s market value to its book value (“Tobin’s Q”);
 5. EBITDA; and
 6. Interest payments.
- (8) The following table shows sample statistics for some of these variables. We observe significant dispersion in the relevant variables considered.

Table 1: Financial statistics of telecommunications companies, 1990-2012

Variables	Obs.	Average	Std. Dev.	Min.	Max.
Investment (€m)	2,252	733	2,082.8	0	36,006
Cash Flow (€m)	2,119	1,101	3,050.2	-1,741	28,324
Capital (€m)	2,177	4,059	11,126.0	0	120,666
I / K	2,064	1.3	28.1	0	1,094
CF / K	1,951	3.0	73.3	-417	2,449
Tobin’s Q	1,927	8.3	196.2	0	8,201

Notes: [i] Investment defined as capital expenditure (addition to fixed assets) that represents the funds used to acquire fixed assets other than those associated with acquisitions. [ii] Cash flow defined as net cash flow from operating activities that represents the net cash receipts and disbursements resulting from the operations of the company; [iii] Capital: Property plant and equipment represents gross property, plant and equipment less accumulated reserves for depreciation, depletion and amortization.

Source: Compass Lexecon using data from Thomson One.

Econometric model

- (9) We use a standard econometric model developed by Fazzari, Hubbard and Petersen (1988)¹⁶⁷ to estimate the impact on investment of an increase in cash flow, controlling for potential variations in the investment opportunities across firms and across time.
- (10) The basic model is set out below.

$$\left(\frac{I}{K}\right)_{it} = a_i + bQ_{it} + c\left(\frac{CF}{K}\right)_{it} + \varepsilon_{it}$$

- (11) The variables in the model are defined as follows:

¹⁶⁷ Fazzari, S., Hubbard, G. and B. Petersen (1988), “Financing Constrains and Corporate Investments,” *Brookings Papers on Economic Activity* 1.

1. (I/K) it is the investment ratio of firm i in year t , where I captures capital expenditures, and K is start-of-period property, plant and equipment.¹⁶⁸
 2. (CF/K) it is the cash-flow ratio of firm i in year t .
 3. Q_{it} is the Tobin's Q of firm i in year t , i.e. the ratio of the firm's market value to book value at the start of the year.
- (12) The aim of the analysis is to quantify the parameter c , which measures the change in the investment ratio of a firm (in pp) when its cash-flow ratio increases by 1 pp. If the parameter c is found to be positive and statistically significant then this provides evidence that firms invest more when they have more cash on hand.
- (13) Tobin's Q – the ratio of a firm's market value over its book value – is a measure of how the market evaluates the investment opportunities of a firm. Firms with better opportunities can be expected to invest more, and inclusion of Tobin's Q as an explanatory variable in the model controls for this influence.
- (14) In addition to Tobin's Q , we have included year fixed effects and firm fixed effects variables in the model:
1. The year fixed effects variables control for influences on firms' investment behaviour that affect all firms alike and that change over time (e.g. the business cycle of the telecommunications industry, shocks to the financial system);
 2. Firm fixed effects variables control for firm-specific influences on investment behaviour that do not change over time (e.g. dividend payout policy and the strength of their institutional relationships with banks).

Results

- (15) Table 2 shows the results of the estimation of the investment model described above. Four different sets of results are reported:
1. Column [1] shows the results of the baseline model estimated using the ordinary least squares ("OLS") method.

¹⁶⁸ The reason why investment and cash flow are divided by capital is that firms in the sample are of very different sizes; the ratios are used to normalise.

2. Column [2] shows the results for the same model estimated using instrumental variables (“IV”) techniques to take into account the possible endogeneity of the Tobin’s Q.¹⁶⁹
3. Columns [3] and [4] show how the results in columns [1] and [2] change when we exclude from the sample observations related to years when the companies in question were under financial distress.¹⁷⁰ The economic literature has shown that investment decisions of firms in financial distress may not be responsive to changes in cash flows. Such firms tend to limit capital expenditure to the most essential investments that cannot be delayed and direct any additional cash flows to payment of debt in order to avoid bankruptcy.¹⁷¹

Table 2: Estimation of the effect of cash flows over investment

Variables	Non-distressed firms			
	[1] OLS	[2] IV	[3] OLS	[4] IV
Tobin’s Q _{it}	-0.3625*** [0.000]	0.0931 [0.828]	0.0127*** [0.000]	0.1670*** [0.000]
(CF / K) _{it}	0.3804*** [0.000]	0.3943*** [0.000]	0.4459*** [0.000]	0.4460*** [0.000]
Constant	1.5790*** [0.000]	-0.6989 [0.694]	-0.0164 [0.789]	-0.5229*** [0.005]
Year FE	YES	YES	YES	YES
Company FE	YES	YES	YES	YES
Observations	1,737	1,593	1,405	1,300
R-squared	0.591	0.586	0.998	0.993
Number of firms	169	169	158	157

Notes: [i] Dependent variable is the investment ratio $(I/K)_{it}$; [ii] p-values in brackets *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; [iii] In the models [2] and [4] we use lagged values of Tobin’s Q as instrument for Q; [iv] in models [3] and [4] we selected those companies and years with an interest coverage ratio above 1.

Source: Compass Lexecon using data from Thomson One.

¹⁶⁹ Tobin’s Q may be endogenous in our regression model for two reasons: (i) it may be measured with error and/or (ii) it could be driven by factors simultaneously affecting cash flows, such as future profit expectations. To correct for possible endogeneity we have used IV estimation techniques using lagged variables of Tobin’s Q as instruments.

¹⁷⁰ We use the interest coverage ratio (“ICR”) to measure the financial capacity of firms. The ICR is the ratio between the annual earnings before interest, taxes, depreciation and amortization (EBITDA) and interest expenses. A firm is considered financially distressed when the ICR is below one.

¹⁷¹ See Allayannis and Mozumdar (2004), “The impact of negative cash flows and influential observations on investment-cash flow sensitivity estimate”, *Journal of Banking and Finance*; Fazzari, Hubbard and Peterson (2002), “Investment-cash flow sensitivities are useful: A comment on Kaplan and Zingales”, *Quarterly Journal of Economics*.

(16) The results are as follows:

1. On the basis of the whole sample of firms, including firms in financial distress (results in columns [1] and [2]), we find that there is a positive and statistically significant effect of cash flow on investment. An increase in the cash-flow ratio by 10pp leads to an increase of 3.8pp-3.9pp in the investment ratio.
2. On the basis of the sample excluding firms in financial distress (results in columns [3] and [4]) we find that an increase in the cash-flow ratio by 10 p.p. leads to a slightly higher increase – of 4.5pp – in the investment ratio. Again, this result is statistically significant.

(17) In addition, we have considered a specification linking changes in investment to changes in the level of cash flow.¹⁷² The results, shown in Table 3, confirm the positive and statistically significant impact of cash flow on investment in the telecommunications industry.

Table 3: Estimation of the effect of changes in cash flow on changes in investment

Variables	[1]	[2]
Tobin's Q_{it}	-0.3851*** [0.001]	2.6328 [0.289]
$\Delta(CF / K)_{it}$	0.3821*** [0.000]	0.4313*** [0.000]
Constant	-0.0947 [0.437]	-0.1997 [0.671]
Year FE	YES	YES
Company FE	YES	YES
Observations	1,551	1,268
R-squared	0.583	0.833
Number of firms	169	157

Notes: [1] Dependent variable is the change in the investment ratio (I/K)_{it}; [2] p-values in brackets *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; [3] In model [2] we selected those companies and years with an interest coverage ratio above 1.

Source: Compass Lexecon using data from Thomson One.

Robustness tests

(18) As shown in Table 1 above, the set of firms covered by the data is very heterogeneous in terms of cash-flow ratio and capital stock. We have, therefore, performed several robustness checks to ensure that our results are not driven by observations with extreme cash-flow ratios or by

¹⁷² We used changes, rather than the levels, in the investment-capital ratio as the dependent variable and changes in the cash flow to capital ratio as the variable of interest.

small, potentially more financially constrained firms. For that purpose, we repeated the estimations on the basis of appropriately adjusted sub-samples (as further explained below).

(19) In addition, we have produced estimates on the basis of a more strictly defined set of non-financially distressed firms, and estimates controlling for country fixed effects – i.e. country-specific influences that affect all firms based in the country in question (e.g. financial regulation).

(20) In particular, we produced:

1. OLS and IV estimates using a sub-sample of observations with cash-flow ratios within the 10th and 90th percentiles: The effect of cash flow on investment continues to be positive and statistically significant. We find that a 10pp increase in the cash-flow ratio leads to an increase in the investment ratio of 2.6pp-3.2pp.¹⁷³
2. OLS and IV estimates using a sub-sample of observations with cash-flow ratios within the 25th and 75th percentiles: The effect of cash flow on investment continues to be positive and statistically significant. We find that a 10pp increase in the cash-flow ratio leads to an increase in the investment ratio of 2.0pp - 2.9pp.¹⁷⁴
3. OLS and IV estimates using a sub-sample of observations with capital above 100 million euros: The effect of cash flow on investment continues to be positive and statistically significant. We find that a 10pp increase in the cash-flow ratio leads to an increase in the investment ratio of 2.9pp - 5.7pp.¹⁷⁵
4. OLS and IV estimates using a smaller sample of non-financially distressed firms (i.e., firms with an ICR above 2): The effect of cash flow on investment continues to be positive and statistically significant. We find that a 10pp increase in the cash-flow ratio leads to an increase in the investment ratio of 2.5pp - 4.5pp.¹⁷⁶
5. OLS and IV estimates including country fixed effects: The effect of cash flow on investment continues to be positive and statistically significant. We find that a 10pp increase in the cash-flow ratio leads to an increase in the investment ratio of 2.6pp - 4.5pp, depending on whether we consider the entire sample or if we use a sub-sample of observations with cash-flow ratios within the 10th and 90th percentiles.¹⁷⁷

¹⁷³ See Table 5 below.

¹⁷⁴ See Table 5 below.

¹⁷⁵ See Table 6 below.

¹⁷⁶ See Table 7 below.

¹⁷⁷ See Table 8 below.

Conclusions

- (21) We find that, for a sample of 170 telecommunications firms, an increase in the cash-flow ratio by 10 percentage points (“pp”) is associated with an increase in the investment ratio of 3.8pp to 4.5pp. This is after controlling for the impact of differences in investment opportunities on firms’ investment behaviour.
- (22) These results are statistically significant and robust to variations in the specification of the econometric model and the sample of firms analysed. This confirms that the ability of telecommunications companies to invest in profitable business opportunities increases with the cash flow that they generate.

Set of telecommunications firms used in the econometrics analysis

- (23) Table 4 below shows the list of firms considered in the econometric analysis.
- (24) We selected public companies with Thomson Primary Industry SIC code equal to 4813 (“Telephone Communications”).¹⁷⁸

Table 4: Firms included in the analysis

3U Holding AG	Colt Group SA	Pervasip Corp
8x8 Inc	Comcast Corp	Phonera publ AB
ADEPT TELECOM PLC	Compania Nacional de Telefonos Telefonica del Sur SA	Phonetime Inc
AFK Sistema OAO	Consolidated Communications Holdings Inc	Polaris Ltd
ALTERNATIVE NETWORKS PLC	Cordia Corp	Portugal Telecom SGPS SA
ATM SA	Covista Communications Inc	QSC AG
Al Deera Holding Co KSCC	Deltathree Inc	Quadrant Televentures Ltd
Alaska Communications Systems Group Inc	Deutsche Telekom AG	Quebecor Inc
Alteva Inc	Digerati Technologies Inc	REDSTONE PLC
American Nortel Communications Inc	Digistar Corp Bhd	Rostelekom OAO
Atlantic Tele-Network Inc	Directcash Payments Inc	SK Broadband Co Ltd
BCE Inc	EXTERNET Telekomunikacios es Internet Szolgaltato Nyrt	STARCOMMS PLC
BH Telecom dd Sarajevo	Ecotel Communication ag	Samart Telcoms PCL
BT GROUP PLC	Edatel SA ESP	StarHub Ltd
Bahnhof publ AB	Emirates Telecommunication Corp Ltd	Stjarnafyrkant AB
Bakrie Telecom Tbk PT	Empresa Nacional de Telecomunicaciones SA	Swisscom AG

¹⁷⁸ Seven firms identified as investment firms with participations in telecommunications companies were excluded from the analysis: API Invest & Finanz AG; Aly Energy Services Inc; Embratel Participacoes SA; Jereissati Participacoes SA; Tim Participacoes SA; Almendral SA; e-Kong Group Ltd. In addition, 56 firms have been excluded for which information on the relevant variables was unavailable in at least 3 years.

Bashinformsvyaz' OAO	Empresa de Telecomunicaciones de Bogota SA ESP	TDC A/S
Belgacom SA	Etiad Etisalat SJSC	TELECOM PLUS PLC
Bell Aliant Inc	KCOM Group PLC	TELUS Corp
Bezeq the Israeli Telecommunication Corp Ltd	KT Corp	TEO LT AB
Blue Label Telecoms Ltd	KazTransCom AO	TIME dotCom Bhd
Budget Telecom SA	Kazakhtelekom AO	TT&T PCL
Buzz Telecommunications Services Inc	Key West Global Telecommunications Bhd	Tata Communications Ltd
CA Nacional Telefonos de Venezuela	Keyyo SA	Tata Teleservices (Maharashtra) Ltd
CABLE & WIRELESS COMMUNICATIONS PLC	KongZhong Corp	Tattelekom OAO
Forthnet SA	Koninklijke KPN NV	Telecard Ltd
Forval Corp	LF Tel SA	Telecom Corporation of New Zealand Ltd
Frontier Communications Corp	LICT Corp	Telecom Egypt Co SAE
Fusion Telecommunications International Inc	Level 3 Communications Inc	Telecom Italia SpA
General Communication Inc	M1 Ltd	Telecom Reseaux Services SA
Global Telecom & Technology Inc	M2 TELECOMMUNICATIONS GROUP LTD	Telefonica Chile SA
Glowpoint Inc	MAINTEL HOLDINGS PLC	Telefonica Czech Republic as
Hawe SA	Macquarie Telecom Group Ltd	Telefonica Holding de Argentina SA
Hellas Online SA	Magyar Telekom Tavkozlesi Nyrt	Telefonica Moviles SA
Hellenic Telecommunications Organization SA	Mahanagar Telephone Nigam Ltd	Telefonica SA
Hickory Tech Corp	Manaris 2010 Corp	Telefonica del Peru SAA
Huge Group Ltd	Manitoba Telecom Services Inc	Telekom Austria AG
Hutchison Telecommunications Hong Kong Holdings Ltd	Maxcom Telecomunicaciones SAB de CV	Telekom Slovenije dd
IDT Corp	Mediag3 Inc	Telekomunikacja Polska SA
Ideal Group SA	Mediatel SA	Telenet Group Holding NV
Iliad SA	Mni SA	Telestrada SA
Internet Gold Golden Lines Ltd	Moskovskaya gorodskaya telefonnaya set' OAO	Telkom SA SOC Ltd
Intracom Holdings SA	Mox Telecom AG	Telstra Corporation Ltd
Ironhawk Technologies Inc	NETIA SA	Transferator publ AB
Iteknik Holding Corp	NTS Inc	Tw telecom inc
Itissalat Al Maghrib Ste SA	Netel Technology (Holdings) Ltd	Ukrtelekom PAT
Jasmine Telecom Systems PCL	New Ulm Telecom Inc	Vivendi SA
Jazztel PLC	New York Telecom Exchange Inc	Vodafone Egypt Telecommunications Co SAE
Jereissati Telecom SA	Newsphone Hellas SA	Vodafone Group PLC
Jordan Telecommunications Co PLC	Nippon Telegraph And Telephone Corp	Welldone Co

Cbeyond Inc	Now Corp	Windstream Holdings Inc
Celexpress Inc	Nu Tek India Ltd	Wiscom System Co Ltd
CenturyLink Inc	Oi SA	World Access Inc
China Motion Telecom International Ltd	Onse Telecom Corp	Xtranet Gruppen i Stockholm publ AB
China Telecom Corp Ltd	Orange SA	Zenitel NV
Chunghwa Telecom Co Ltd	PTGi Holding Inc	Zhone Technologies Inc
Cincinnati Bell Inc	Pccw Ltd	

Source: Thomson One

Robustness tests

(25) We performed five robustness tests.¹⁷⁹

(26) We re-estimated the OLS and IV models on:

1. A sub-sample using only observations with cash flow ratios within the 10th and 90th percentiles;
2. A sub-sample using only observations with cash flow ratios within the 25th and 75th percentiles;
3. A sub-sample using only observations with property plant and equipment above 100 million euros;
4. A smaller sample of financially not constrained firms (i.e., those with ICR above 2);
5. Added country fixed effects in the full sample and the 10th-90th percentile sample.

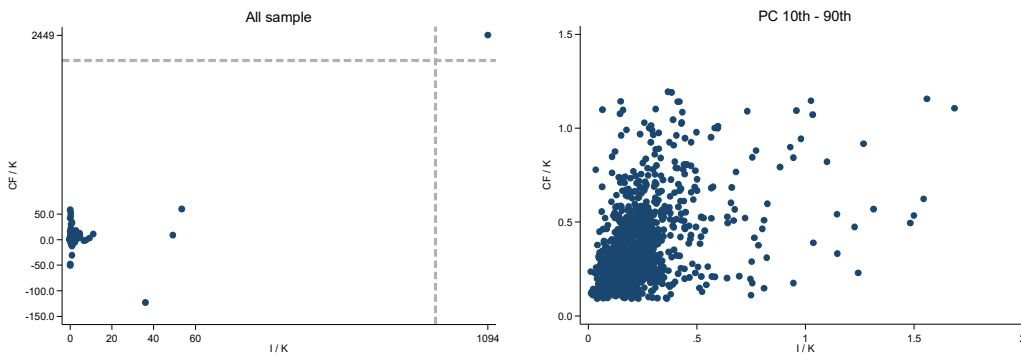
(27) We present the results below.

Sensitivity to potential cash flow ratio outliers

(28) We observe significant dispersion levels in the values of the cash-flow ratio. The two panels of Figure 1 below show the distributions of cash-flow ratio and investment ratio for (i) the entire sample of firms (excluding those observations with financial distress) and (ii) the sample excluding those observations with cash-flow ratio outside the 10th and 90th percentile.

Figure 1: Distribution of cash-flow ratio and investment ratio

¹⁷⁹ We performed these tests considering companies with no financial distress (i.e. we excluded from the sample those companies/years with an ICR below 1).



*Note: We excluded from the sample those companies/years with an interest coverage ratio below 1 (financial distress).
Source: Compass Lexecon using data from Thomson One.*

(29) We have tested the sensitivity of our results to the exclusion of observations with very high and very low cash-flow ratios. Table 5 shows the estimation results for samples including only observations within the 10th and 90th percentile of the cash-flow ratio and only observations within the interquartile range of the cash-flow ratio. Columns [1] and [2] show the estimation results considering the sample within the 10th and 90th percentile of the cash-flow ratio. In column [1] we present our baseline model and in column [2] we use instrumental variables to address the potential endogeneity of Tobin’s Q. Columns [3] and [4] show the estimation results considering the sample within the interquartile range. Column [3] uses ordinary least squares and column [4] presents the model using instrumental variables. In all cases we find a positive and statistically significant impact of cash flow on investment.

Table 5: Estimation of the effect of cash flows on investment

Variables	[1]	[2]	[3]	[4]
	OLS 10th – 90th	IV 10th – 90th	OLS 25th – 75th	IV 25th – 75th
	0.0421*** [0.000]	0.0587*** [0.000]	0.0346* [0.093]	0.0900*** [0.001]
	0.3189*** [0.000]	0.2571*** [0.000]	0.2918*** [0.004]	0.1988*** [0.003]
	0.0519 [0.160]	0.0670*** [0.002]	0.1202** [0.012]	0.0276 [0.436]
Year FE	YES	YES	YES	YES
Company FE	YES	YES	YES	YES
Observations	1,135	1,060	715	669
R-squared	0.225	0.205	0.236	0.0474
Number of firms	137	135	111	109

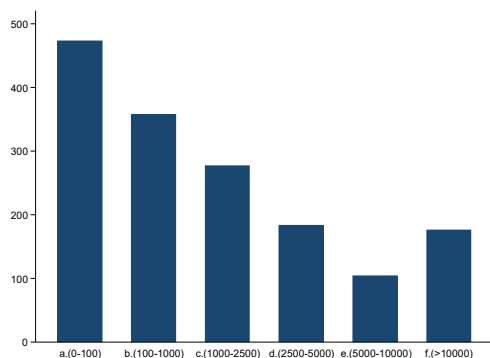
Notes: [i] Dependent variable is the investment ratio $(I/K)_it$; [ii] p-values in brackets *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; [iii] In the models [2] and [4] we use lagged values of Tobin's Q as instrument for Q; [iv] Only companies and years with an interest coverage ratio above 1 have been considered.

Source: Compass Lexecon using data from Thomson One.

Sensitivity to size of the stock of capital

(30) We have also considered the robustness of the results when we include only those companies and years with capital above 100 million Euro. Figure 2 below shows the distribution of the sample, across the different ranges of capital values. Around 27% of the observations have a capital value below 100 million.

Figure 2: Number of observations, by capital values



Note: Only observations of non-financially distressed companies and years are included.

Source: Compass Lexecon using data from Thomson One.

(31) Table 6 below shows estimation results when we consider only those observations with capital above 100 million. We continue to find a positive and statistically significant effect of cash flow on investment.

Table 6: Estimation of the effect of cash flows over investment, K>100 million €

Variables	[1] OLS	[2] IV
Tobin's Q _{it}	0.0282** [0.019]	0.0673*** [0.000]
(CF / K) _{it}	0.5693*** [0.000]	0.2930*** [0.000]
Constant	-0.0043 [0.920]	0.0244 [0.218]
Year FE	YES	YES
Company FE	YES	YES
Observations	1,006	948
R-squared	0.64	0.325
Number of firms	97	96

Notes: [i] Dependent variable is the investment ratio (I/K)_{it}; [ii] p-values in brackets *** p<0.01, ** p<0.05, * p<0.1; [iii] In the model [2] we use lagged values of Tobin's Q as instrument for Q; [iv] Only companies and years with an interest coverage ratio above 1 considered.

Source: Compass Lexecon using data from Thomson One.

Sensitivity to the definition of financially constrained firms

(32) We have estimated the model considering only those companies and years that register an ICR higher than 2 (see Table 7). We have estimated these models (i) without any further sample restriction (see columns [1] and [3]) and (ii) considering the sample of firms with cash-flow ratios within the 10th and 90th percentile (columns [2] and [4]). Results remain qualitatively unchanged with respect to results presented so far.

Table 7: Estimation of the effect of cash flows on investment

Variables	[1] ICR>2 OLS All sample	[2] ICR>2 OLS 10th – 90th pctile	[3] ICR > 2 IV All sample	[4] ICR > 2 IV 10th – 90th pctile
Tobin's Q _{it}	0.0128*** [0.000]	0.0438*** [0.000]	0.1697*** [0.000]	0.0585*** [0.000]
(CF / K) _{it}	0.4459*** [0.000]	0.3011*** [0.000]	0.4461*** [0.000]	0.2534*** [0.000]
Constant	0.0095 [0.839]	0.0913*** [0.000]	-0.5210*** [0.009]	0.0707*** [0.002]
Year FE	YES	YES	YES	YES
Company FE	YES	YES	YES	YES
Observations	1,341	1,085	1,240	1,012
R-squared	0.998	0.218	0.993	0.213
Number of firms	157	133	156	131

Notes: [i] Dependent variable is the investment ratio $(I/K)_{it}$; [ii] p-values in brackets *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; [iii] In the models [2] and [4] We consider only those observations for which the cash-flow ratio is within the 10th and 90th percentile; [iv] In the models [3] and [4] we use lagged values of Tobin's Q as instrument for Q; [v] Only companies and years with an interest coverage ratio above 2 considered.

Source: Compass Lexecon using data from Thomson One.

Sensitivity to the inclusion of country fixed effects

(33) Finally, we have estimated the model including country fixed effects (see Table 8). Results remain qualitatively unchanged.

Table 8: Estimation of the effect of cash flows on investment

Variables	[1] OLS All sample	[2] OLS 10th – 90th pctile	[3] IV All sample	[4] IV 10th – 90th pctile
Tobin's Q_{it}	0.0127*** [0.000]	0.0421*** [0.000]	0.167 [0.246]	0.0587** [0.011]
$(CF / K)_{it}$	0.4459*** [0.000]	0.3189*** [0.000]	0.4460*** [0.000]	0.2571*** [0.000]
Constant	0.0737 [0.565]	0.0829 [0.106]	0.1118 [0.540]	0.0455 [0.350]
Year FE	YES	YES	YES	YES
Company FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Observations	1405	1135	1300	1060
R-squared	0.998	0.584	0.997	0.6

Notes: [i] Dependent variable is the investment ratio $(I/K)_{it}$; [ii] p-values in brackets *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; [iii] In the models [2] and [4] we consider only those observations for which the cash-flow ratio is within the 10th and 90th percentile; [iv] In the models [3] and [4] we use lagged values of Tobin's Q as instrument for Q; [v] only companies and years with an interest coverage ratio above 1 considered.

Source: Compass Lexecon using data from Thomson One.

Appendix 3: Glossary of Legal and Economic Terms

Chilling Effects: The inhibition or discouragement of the legitimate exercise of natural and legal rights by the threat of legal sanction.

Collusive Equilibrium: Collusive scenario which occurs where the short run profit from deviating from the collusive behavior is lower than the long run loss from being punished by the other firms after the deviation.

Concentration: Where two or more previously independent undertakings merge (merger), where an undertaking acquires control of another undertaking (acquisition of control), or where a joint venture is created, performing on a lasting basis all the functions of an autonomous economic entity (full-function joint venture).

Demand Elasticity: Refers to how sensitive the demand for a good is to changes in other economic variables, such as the prices and consumer income. A higher demand elasticity for a particular economic variable means that consumers are more responsive to changes in this variable, such as price or income.

DESI: The Digital Economy and Society Index is a composite index that summarizes relevant indicators on Europe's digital performance and tracks the evolution of EU member states in digital competitiveness.

EBITDA Margin: Measurement of a company's operating profitability as a percentage of its total revenue. It is equal to earnings before interest, tax, depreciation and amortization (EBITDA) divided by total revenue.

Equilibrium Price: The competitive price, where the supply of goods matches demand.

Ex Ante analysis: Analysis conducted on a forward-looking and preventive basis.

Ex Post analysis: Analysis based on past conducts or facts.

Fringe Player: A newer and/or less powerful market participant.

Margin Squeeze: Occurs when the difference between the wholesale price of an input supplied by a dominant entity and the relevant downstream price does not give an efficient downstream firm a reasonable profit margin.

Maverick: A maverick is a firm that has a greater economic incentive to deviate from standard market practices than most of its rivals and constitutes an unusually disruptive force in the market place.



Oligopoly: A market structure in which a small number of firms has the large majority of market share.

Pent-up Demand: When demand for a service or product is unusually strong and typically unmet.

Sunk Costs: Costs that have already been incurred and thus cannot be recovered.

Supra-competitive Prices: Prices that are above what can be sustained in a competitive market.

Type I Errors (false positives): Where public authorities unduly regulate a market and impose remedies on firms that are behaving competitively.

Type II Errors (false negatives): Where public authorities fail to intervene even though prices are supra-competitive as a result of anti-competitive actions.