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COMPETITION ENFORCEMENT IN OLIGOPOLISTIC MARKETS

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TABLE OF CONTENTS

1.	Introduction.....	3
2.	Is there an enforcement gap?.....	4
3.	The notion of agreement	6
4.	Assessing the co-ordinated effects of mergers.....	7
4.1	Analytical framework.....	8
4.2	Quantitative tools.....	13
5.	Provisions on abuse of dominance or monopolisation.....	14
5.1	United States.....	15
5.2	India.....	16
5.3	European Union.....	16
6.	Additional tools.....	19
6.1	Unfair methods of competition.....	20
6.2	Law targeting a particular facilitating practice	21
6.3	Market investigations	22
6.4	Law targeting a particular market structure.....	23
6.5	(Interim) Price control provisions.....	24
7.	Concluding remarks	25
	Appendix A – Quantitative Tools for Analysing the Co-Ordinated Effects Of Mergers	26
	Bibliography	34

Boxes

Box 1.	Parallel Accommodating Conduct.....	11
Box 2.	Prevalence of co-ordinated effects theories of harm in US and EU merger cases	12

COMPETITION ENFORCEMENT IN OLIGOPOLISTIC MARKETS

*By the Secretariat**

1. Introduction

1. Oligopolies are markets characterised by a small number of competitors and barriers to entry such that firms are interdependent, i.e. their strategic decisions have a meaningful impact on one another. In recognition of these perceived interdependencies, profit-maximising firms in oligopoly markets will rationally take into account their rivals' behaviour and anticipated reactions when setting prices and other competitive variables.¹ When there is repeated interaction over time, oligopolists may, in certain circumstances, be able to co-ordinate their actions and sustain supra-competitive prices to the detriment of consumer welfare and economic efficiency. While cartel laws prohibit firms from explicitly agreeing to restrict competition, such an agreement may not be necessary, in principle, for firms to successfully co-ordinate their behaviour in tight oligopolies. As stated by Kovacic et al. (2011),

“In highly concentrated markets, the recognition of interdependence can lead firms to coordinate their conduct simply by observing and reacting to their competitors' moves. In some instances, such oligopolistic coordination yields parallel behavior (e.g., parallel price movements) that approaches the results that one might associate with a traditional agreement to set prices, output levels, or other conditions of trade. The line that distinguishes tacit agreements (which are subject to section 1 scrutiny) from mere tacit coordination stemming from oligopolistic interdependence (which eludes section 1's reach) is indistinct.”

2. For decades, competition authority officials, economists, lawyers, and academics, have debated how far competition policy should go to address this issue. Posner (1969) referred to it as “a persistent and difficult problem of antitrust policy”, asking “[w]hat rules and remedies are necessary to prevent supra-competitive prices in oligopolies, markets in which a few sellers account for most of the output?” Thirty years later, OECD (1999) posed a similar question, “[w]hen firms know they are highly interdependent, how can competition authorities help ensure they compete instead of find various ways to co-operate?”

3. Underlying these questions is a concern about potential enforcement “gaps” whereby firms in oligopoly markets may be able to sustain (undesirable) collusive outcomes without violating cartel laws. In tension with these concerns is the need to calibrate legal rules so that they are not over-reaching or unpredictable, which would be counterproductive because it could chill (desirable) competitive behaviour.

4. The Competition Committee has approached this issue from different angles in previous meetings. There have been discussions on: 1) the use of indirect/circumstantial evidence to prove a cartel agreement;² 2) approaches agencies can take to evaluating various “facilitating practices”³ (particularly,

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¹ For instance, an oligopolist may rationally decide not to make aggressive price cuts if it anticipates that rivals would be quick to detect the price cut and match it, thereby eliminating potential gains.

² OECD (2006).

information exchange⁴) which may be used by firms in oligopoly markets to reduce strategic uncertainty and help align their conduct more effectively but can also have pro-competitive effects; and 3) approaches to a particular sector (road fuel) where pricing patterns often lead, rightly or wrongly, to concerns about collusion.⁵ This paper will try to minimise duplication with these past discussions by focusing on new developments, and enforcement tools that have received less direct attention.

5. This paper focuses on collusion and conduct facilitating collusion in oligopolies. Consistent with OECD (2012a), we use the terms “collusion” (or “co-ordination”) in the economic sense to describe a common understanding among firms to restrict competition.⁶ While we acknowledge that it can be a somewhat elusive concept, we use the term “explicit collusion” (or “cartel”) to refer to situations where the common understanding is expressly negotiated through interfirm communications; whereas, we use “tacit collusion” to refer to collusion that is not expressly negotiated.

6. It should be noted of course that high mark-ups and muted competition can arise in oligopoly markets for a variety of reasons other than collusion, including: product differentiation, capacity constraints, information asymmetries, or switching costs.⁷ We do not address these causes of sub-competitive performance here, except to note that the latter two are sometimes the subject of competition advocacy, market investigations, and/or consumer protection-oriented tools (see OECD, 2008).

7. The rest of this paper is organised as follows: Section 2 sets out the broad policy perspectives that motivate the present Committee discussion; Section 3 provides a brief introduction to the notion of agreement, which has been extensively debated by the Committee in previous sessions; Section 4 covers merger control and the analysis of the co-ordinated effects of mergers; Section 5 addresses the use of abuse of dominance or monopolisation-type provisions; and Section 6 surveys additional tools that a number of jurisdictions have adopted to address potential enforcement gaps. Questions are provided for discussion.

2. Is there an enforcement gap?

8. Before discussing the strengths and weaknesses of various enforcement tools, it is useful to briefly review some of the perspectives on the question of whether there is a “gap” in oligopoly markets whereby firms can achieve collusive outcomes without violating cartel laws. The following are some of the more common perspectives that emerge from the literature (not mutually exclusive, and with varying degrees of support):

- **Perspective #1: There is no significant evidence of a gap, and if there is one, it is likely very narrow.** This is mostly because it will be difficult for firms to overcome the inherent challenges of reaching and maintaining a collusive outcome without communicating and leaving behind some evidence of an explicit “agreement” that would be actionable under cartel laws.⁸ Moreover, merger

³ OECD (2007a).

⁴ OECD (2007b); OECD (2010); OECD (2012a).

⁵ OECD (2013a).

⁶ In the extreme, a collusive outcome would approach the monopoly outcome, but in principle it could be anything less competitive than the one-shot Nash equilibrium of the relevant oligopoly model (e.g. Bertrand if firms compete on price; Cournot if they compete on quantity).

⁷ See Freeman (2008).

⁸ Proponents of this view sometimes point to experimental evidence, which suggests that collusion is difficult to achieve in the absence of communication when there are three or more players, e.g. see Huck et al. (2004), Fonseca and Normann (2011), Hortsmann et al. (2015). Conversely, experience with actual prosecuted cartels suggests that when there is communication it may be possible to sustain collusion in a wide variety of market

control can help prevent the emergence of market structures that are conducive to co-ordination. Under this view, there may be *undetected* cases of explicit collusion, but these are best addressed by strengthening existing cartel programmes so that detection rates and sanctions are sufficient to uncover or deter them. In other words, there is no need for new legal doctrines or rules.

- **Perspective #2: Whether there is a gap or not, there is no suitable antitrust remedy for tacit collusion stemming from oligopolistic interdependence.** This is because the typical sanctions/injunctions applied to explicit collusion would be unworkable because they would force firms to behave irrationally given their circumstances. An independent, profit-maximising oligopolist can avoid taking steps to form an explicit price fixing agreement with its competitors, but it cannot simply ignore the actions and likely reactions of its rivals when setting its price.⁹ Under this view, the only potential remedies would be direct price regulation or structural de-concentration of markets, which would be considered intrusive and could lead to unnecessary chilling effects. In other words, the cure would be worse than the disease.
- **Perspective #3: There is a gap, but it can be addressed by re-interpreting or making greater use of standard antitrust tools.** For example, Kaplow (2011a-c) suggests a rethinking of the “agreement” requirement under cartel laws. Petit (2012) and Hemphill and Wu (2013) suggest greater reliance on abuse of dominance or monopolisation-type provisions in settings where a group of firms with collective market power engage in exclusionary conduct. Further developments in predicting/quantifying the co-ordinated effects of mergers could help narrow possible gaps as well. In a relatively new area of research, Mehra (2014) and Ezrachi and Stucke (2015) argue that the increased digitisation of market data and proliferation of algorithmic selling may increase the risk of tacit collusion and stretch traditional antitrust concepts developed for human actors (in other words, the gap may be growing).¹⁰
- **Perspective #4: There is a gap, but it is best addressed through other tools.** Although they appear to be used relatively infrequently, a number of competition authorities have additional tools beyond standard antitrust provisions aimed at cartels, mergers and abuses of dominance/monopolisation that can be used to address potential gap cases in their respective jurisdictions (see Section 6 below).

circumstances. Put together, this suggests that antitrust is right to focus its attention on the explicit form of collusion. Kühn et al. (2001) further argues that the emphasis on communication is justified from a practical policy perspective because evidence of interfirm communications is in principle detectable and verifiable in a court; whereas economic inferences of collusion purely from market outcomes (e.g. levels or movements in prices or mark-ups) is often not possible or is prone to error.

⁹ Justice Breyer stated this succinctly in *Clamp-All Corp. v. Cast Iron Soil Pipe Inst.*, 851 F.2d 478 (1988): “Courts [...] have almost uniformly held [...] that [...] individual pricing decisions (even when each firm rests its own decision upon its belief that competitors will do the same) do not constitute an unlawful agreement [...]. That is not because such pricing is desirable (it is not), but because it is close to impossible to devise a judicially enforceable remedy for “interdependent” pricing. How does one order a firm to set its prices without regard to the likely reactions of its competitors?” (citations omitted).

¹⁰ The concern is not entirely theoretical. The US Department of Justice recently charged a former executive of an e-commerce seller with price fixing. The news release announcing the charge states that “[t]o implement their agreements, the defendant and his co-conspirators adopted specific pricing algorithms for the sale of certain posters with the goal of coordinating changes to their respective prices and wrote computer code that instructed algorithm-based software to set prices in conformity with this agreement.” See http://www.justice.gov/atr/public/press_releases/2015/313011.htm.

9. This paper does not advocate for one view over another. Indeed, it is possible that each of these perspectives is correct to an extent: gaps may be narrow (but not completely negligible), finding a suitable antitrust remedy for co-ordinated conduct falling short of a cartel may be challenging (but in some cases intervention may be merited), there may be room for improvement in the application of standard antitrust tools (at the margin), as well as room for additional tools to address potential gaps. Nevertheless, it useful to keep this range of perspectives in mind in the sections that follows.

3. The notion of agreement

10. Explicit collusive agreements among firms to set prices, divide markets or restrict competition in other ways are considered unlawful universally across jurisdictions.¹¹ However, collusion may be sustained by a variety of arrangements, from a well-organised structure to minimal or no communication between the parties.¹² Competition law faces the challenge of distinguishing between these different situations so that firms know what is lawful and unlawful. One of the central issues is that “the underlying notion of agreement, as many understand the term, proves extremely hard to make operational” (Kaplow, 2011a).

11. For instance, in the EU and the US the notion of agreement is rather broad, at least in principle. In the EU, Article 101 of the Treaty on the Functioning of the European Union (TFEU) applies to all ‘agreements’ and ‘concerted practices’.¹³ However, the TFEU does not provide clear-cut definitions of agreements and concerted practices. Based on case law, the notion of ‘agreement’ has been interpreted in a broad sense and requires two essential elements: (i) the existence of a concurrence of wills between at least two parties; and (ii) the implicit or explicit manifestation of such concurrence.¹⁴ In the absence of a formal agreement, the category of concerted practices can be applied. This involves, among other factors, direct or indirect contacts intended to deliberately influence the conduct of other firms.¹⁵

12. In the US, Section 1 of the Sherman Act declares to be illegal “[e]very contract, combination in the form of trust or otherwise, or conspiracy [...] in restraint of trade or commerce.” According to case law, an agreement does not need to be explicit, provided that two conditions are met: (i) firms have “a unity of purpose or a common design and understanding, or a meeting of minds in an unlawful arrangement”; and (ii) firms have a “conscious commitment to a common scheme.”¹⁶ The definition is in principle very broad and could potentially cover also parallel conduct. In practice, courts have required evidence that observed parallel conduct is indeed the result of co-ordination among the parties and not mere oligopolistic interdependence (so-called ‘plus factors’). An example of a ‘plus factor’ required by courts is that the parties have communicated their intentions to act in a certain way.¹⁷

¹¹ Earlier OECD roundtables have dealt with hard-core cartels and the tools used by competition authorities, e.g. OECD (2006) on plea bargaining, OECD (2009) on settlement procedures in cartel cases, OECD (2012b) on leniency programmes for subsequent applicants, and OECD (2013b) on ex-officio cartel investigations.

¹² There are also differences in the terminology used in the economic literature and in the legal doctrine. As noted by Motta (2004), “whereas in economic theory collusion is defined as a market outcome, anti-trust authorities and judges should consider as illegal only practices where firms *explicitly* coordinate their actions to achieve a collusive outcome.”

¹³ Article 101 prohibits “all agreements [...] and concerted practices [...] which have as their object or effect the prevention, restriction or distortion of competition within the internal market.”

¹⁴ Case T-41/96, *Bayer AG v Commission*, [2000] ECR II-3383, para. 173.

¹⁵ OECD (2012a) provides a broader description and the references to the case law on agreements and concerted practices.

¹⁶ OECD (2012a), Background note, page 36, describes the notion of agreement and the standard of proof.

¹⁷ OECD (2012a) provides a broader description and the references to the case law on ‘plus factors’.

13. In the absence of communication and explicit co-ordination, the applicability of provisions on agreements is not straightforward. Mere parallel conduct, such as simultaneous price increases by competitors, is insufficient to indicate co-ordination since it can result from independent and rational behaviour.¹⁸

14. A more general question has been addressed in the “recently renewed debate about whether classic oligopoly behaviour can be prosecuted as an unlawful agreement” (Hay, 2013). Kaplow (2011a) has argued that the current approach to horizontal agreements may be too formalistic and incapable of addressing harmful interdependence among firms.¹⁹ He has highlighted limitations of this approach, for instance the reliance in US doctrine on communication as an important condition to defining the concept of agreement. Kaplow (2011a) has therefore advocated for a broader interpretation of what constitutes an agreement. However, the suggestion that competition law should capture standard oligopoly behaviour is not without critics, for instance Judge Posner has recently warned against “the danger of the law’s treating tacit collusion as if it were express collusion”.²⁰

4. Assessing the co-ordinated effects of mergers

15. Merger control provides a potential *ex-ante* (i.e. preventative) solution to collusion in oligopolies by providing competition authorities with an opportunity to remedy or prohibit mergers that would render markets (more) conducive to co-ordination, leading to so-called “co-ordinated effects”.²¹

16. There are a number of reasons why agencies may prefer to rely on merger control as the main (or perhaps only) tool for combatting tacit collusion in oligopoly markets. First, as a practical remedial matter, it is probably easier, less disruptive and more effective to prohibit or modify a proposed merger to address the risk of tacit collusion²² than to, for example, split up firms alleged to be engaging in tacit collusion. Second, from a policy perspective, addressing tacit collusion under merger control is less likely to lead to harmful chilling effects on business conduct than an *ex-post* approach. A merger is a readily identifiable structural event (and reviewable/reportable mergers are relatively rare for most firms). There is a defined review process, which enables businesses to plan for it and to make informed risk assessments. The possibility of *ex-post* intervention, on the other hand, could potentially expose broad swathes of business

¹⁸ In 2006, an OECD roundtable on prosecuting cartels without direct evidence discussed the role of circumstantial evidence, such as parallel conduct, communication between the parties and facilitating practices. The discussion also highlighted that circumstantial evidence can be ambiguous and that the “courts sometimes view cases built on circumstantial evidence with scepticism” (OECD, 2006).

¹⁹ He also argues that a narrow view of the meaning of agreement is in contrast with a more economically-based approach to competition law, stating that “successful interdependent coordination that produces supracompetitive pricing leads to essentially the same economic consequences regardless of the particular manner of interactions that generate this outcome.”

²⁰ *Aircraft Cheque Services et al. v. Verizon Wireless et al.*, No. 14-2301 (7th Cir. 2015), available at http://res.cloudinary.com/lbresearch/image/upload/v1428678192/7thCircuitOpinion_ljndj4.pdf

Note that this is in contrast with Posner’s earlier academic writings, quoted among others by Kaplow (2011a).

²¹ The ICN Recommended Practices for Merger Analysis define co-ordinated effects as follows: “Coordinated effects arise when, as a result of a merger, it is likely that firms remaining in the market after the merger will be able to coordinate (either tacitly or explicitly) their behavior or strengthen existing coordination in order to exercise market power.”

²² For example, the US Horizontal Merger Guidelines refer to the “incipiency standard” under their merger law whereby “the Agencies may challenge mergers that in their judgment pose a real danger of harm through coordinated effects, even without specific evidence showing precisely how the coordination likely would take place.”

conduct in concentrated markets to review (e.g. leaving businesses with uncertainty about whether and when it is lawful to match a price increase).

17. However, merger control does not provide a panacea to tacit collusion. First, not all mergers may be reviewable or reportable under a jurisdiction's laws.²³ Second, a merger may not be required for tacit collusion to emerge. Third, merger control cannot be used to cure pre-existing problems; it can be used to address the incremental anti-competitive effects generated by a merger, but cannot be used to improve competitive conditions beyond the pre-merger *status quo*.²⁴ Fourth, co-ordinated effects can sometimes be difficult to predict or prove to the requisite standard. This is because qualitative factors can sometimes be mixed and difficult to weigh, and quantitative tools are relatively under-developed. This may partly explain why there are fewer challenges to mergers based on co-ordinated effects grounds.²⁵

18. Some commentators have argued that merger control should not have a "monopoly" over tacit collusion (e.g. Petit and Henry, 2010); while others have argued that it is the most appropriate legal mechanism available (e.g. Hawk and Motta, 2008). This section briefly discusses the analytical framework used to analyse the co-ordinated effects of mergers based on merger guidelines in a number of jurisdictions. It then moves to a brief discussion of quantitative tools (further discussed in Appendix A).

4.1 Analytical framework

19. The analysis of co-ordinated effects in merger control generally involves two steps: 1) an assessment of whether the relevant markets affected by the merger are conducive to co-ordination; and 2) an assessment of whether the merger would make such co-ordination more likely or effective.

²³ For example some jurisdictions may not be able to review certain minority acquisitions, or mergers falling below relevant turnover/revenue thresholds; although, pre-merger notification rules and jurisdictional thresholds are generally designed to capture the mergers most likely to raise concerns.

²⁴ Some agencies recognise that a merger may, in certain circumstances, decrease the likelihood of co-ordinated effects and therefore enhance competition. For example the Canadian Merger Guidelines appear to recognise at least two scenarios: "a merger may increase asymmetries between the merged firm and its rivals, thereby making coordinated behaviour less profitable and therefore less likely" and "[t]he impact of efficiencies on a firm's cost structure may render coordination more difficult by enhancing its incentive to compete more vigorously."

²⁵ This does not necessarily imply under-enforcement. To assess this, one would need to conduct *ex-post* studies to see if cleared mergers had actually resulted in co-ordinated effects. While there are a growing number of *ex-post* assessments of merger control decisions, there appear to be relatively few focusing on co-ordinated effects, perhaps due to data limitations or empirical challenges. An exception is Brito et al. (2013), which studies a series of mergers in three Portuguese non-life insurance markets using merger simulation techniques with detailed cost and demand data of 13 merging and non-merging firms over a nine-year period, finding no evidence of co-ordinated effects.

4.1.1. *Conduciveness of markets to co-ordination*

20. While there are some slight differences in formulation across jurisdictions²⁶, agencies generally assess whether market conditions are conducive to co-ordination by examining whether a group of firms can:

(C1) reach mutually acceptable terms of co-ordination;

(C2) monitor adherence to those terms;

(C3) respond to deviations through credible deterrent mechanisms (internal sustainability); and,

(C4) overcome reactions from buyers (countervailing power) or existing or potential competitors not part of the co-ordinating group (expansion/entry) that could jeopardise the co-ordination (external sustainability).

21. The US Horizontal Merger Guidelines provide a notable exception in that they envisage an additional form of co-ordinated interaction, known as “parallel accommodating conduct”, which does not necessarily rely on the criteria above (see Box 1 below). We abstract from this in what follows.

22. To facilitate the analysis some agencies make use of indicative “safe-harbours”²⁷ or rebuttable presumptions²⁸ based on measures of post-merger market concentration and changes in concentration brought about by the merger. For the most part, however, agencies appear to rely on a fact-specific assessment of various factors or indicia that can be used to evaluate the criteria above. OECD (1999) and OECD (2012a) provide a detailed review of factors conducive to co-ordination. Table 1 summarises some of the more common ones cited in merger guidelines.

²⁶ For example, terminology differs across jurisdictions. This may be due to challenges in finding a neutral yet descriptive way of capturing the underlying mechanisms of tacit and explicit collusion. Also, words used to demonstrate economic or game theoretic concepts, may carry more active or illicit connotations in ordinary use. The Australian Merger Guidelines clarify that, “‘settle on terms’ and ‘consensus’ do not necessarily involve communication or active coordination but are intended to reflect muted competition, tacit collusion and explicit collusion.” Similarly, the EU Horizontal Merger Guidelines clarify that, “[a]lthough deterrent mechanisms are sometimes called ‘punishment’ mechanisms, this should not be understood in the strict sense that such a mechanism necessarily punishes individually a firm that has deviated. The expectation that coordination may break down for a certain period of time, if a deviation is identified as such, may in itself constitute a sufficient deterrent mechanism.”

²⁷ For example, the Canadian Merger Guidelines indicate that a merger will generally not be challenged on the basis of a concern related to co-ordinated effects when the post-merger market share of the four largest firms would be less than 65% or if the post-merger market share of the merged firm would be less than 10%. The Japanese Merger Guidelines indicate that further analysis is normally not required if the post-merger Herfindahl-Hirschman Index (HHI) is: 1) less than 1500; 2) between 1500 and 2500 but with an increment of 250 or less; or 3) more than 2500 but with an increment of 150 or less.

²⁸ Under the German Merger Guidelines a rebuttable presumption of collective dominance is triggered if three or fewer companies reach a combined market share of 50 percent; or if five or fewer companies reach a combined market share of two thirds. However, the guidelines state that the main function of the presumption is to provide merging parties with strong incentives to provide information at an early stage and that they are not often invoked when the authority takes its decisions. Under the US Horizontal Merger Guidelines a merger will be presumed to be likely to enhance market power if the post-merger HHI is greater than 2500 with an increment greater than 200.

Table 1. Common factors for evaluating whether a market is conducive to co-ordination based on the merger guidelines of seven jurisdictions*

Factors	Frequency**	Rationale
Number of firms / Market concentration	All	Co-ordination may be easier when a small number of firms represent a significant share of the market
Product homogeneity	All	It may be easier for firms to reach mutually acceptable terms of co-ordination when their products are relatively similar
Market transparency	All	It is easier to monitor and detect deviations from co-ordination when relevant sales terms are transparent
History of co-ordination (in same or similar market)	All	A history of co-ordination can provide evidence that firms have successfully overcome obstacles to co-ordination in the past. It may also establish ground rules for future co-ordination
Frequency / Size of transactions	High	If transactions are large and infrequent it may be difficult to credibly deter deviations from co-ordination
Presence of a maverick / Vigorous competitor	High	A maverick firm may resist/disrupt co-ordination because it faces different economic incentives
Market maturity / Level of innovation in market	High	It may be more difficult to sustain co-ordination in a rapidly changing market, or one characterised by 'leapfrog' innovation
Cost symmetries	High	Asymmetries between firms may make it more difficult to reach mutually acceptable terms of co-ordination
Excess capacity	Moderate	Excess capacity can strengthen the credibility of deterrence mechanisms, but may also increase incentives for deviation
Volatility supply/demand	Moderate	Market fluctuations may make it difficult to maintain acceptable terms and detect deviations unless co-ordination is premised on a simple scheme like customer or market allocation
Meeting competition clauses	Moderate	May enhance ability to detect and respond to deviations
Multi-market contact	Moderate	May enhance the ability to deter deviations by enabling punishment across more markets

*Source: Merger Guidelines in Australia, Canada, EU, Japan, Korea, UK, and US (see Bibliography)

**All = 7, High = 5-6, Moderate = 3-4

23. These factors are analysed collectively. However, this can be challenging because most of the factors are continuous and subjective (e.g. at what point are transactions small and frequent enough?). Moreover, in a particular market some factors may count in favour of co-ordination while others may count against it. It can be difficult to find an objective way to weigh a mixed set of factors because there is no 'scoring rule', or generally accepted view on the set(s) of factors that are necessary and sufficient to support co-ordination. This may partly explain why agencies have particular regard for evidence of prior collusion or attempted collusion in demonstrating the plausibility of a co-ordinated effects theory.²⁹ "Hot" documents may also play a role to the extent that they point to an anti-competitive rationale for the merger that would be consistent with post-merger co-ordinated effects.

²⁹ For example, the US Horizontal Merger Guidelines state that "[t]he Agencies presume that market conditions are conducive to coordinated interaction if firms representing a substantial share in the relevant market appear to have previously engaged in express collusion affecting the relevant market, unless competitive conditions in the market have since changed significantly. Previous express collusion in another geographic market will have the same weight if the salient characteristics of that other market at the time of the collusion are comparable to those in the relevant market. Failed previous attempts at collusion in the relevant market suggest that successful collusion was difficult pre-merger but not so difficult as to deter attempts, and a merger may tend to make success more likely. Previous collusion or attempted collusion in another product market may also be given substantial weight if the salient characteristics of that other market at the time of the collusion are closely comparable to those in the relevant market."

Box 1. Parallel Accommodating Conduct

The 2010 US Horizontal Merger Guidelines introduced a new type of co-ordinated interaction referred to as “parallel accommodating conduct” (PAC). The guidelines differentiate PAC from the traditional categories of explicit and tacit collusion in the following way:

“Coordinated interaction can involve the explicit negotiation of a common understanding of how firms will compete or refrain from competing. Such conduct typically would itself violate the antitrust laws. Coordinated interaction also can involve a similar common understanding that is not explicitly negotiated but would be enforced by the detection and punishment of deviations that would undermine the coordinated interaction. *Coordinated interaction alternatively can involve parallel accommodating conduct not pursuant to a prior understanding.* Parallel accommodating conduct includes situations in which each rival’s response to competitive moves made by others is *individually rational, and not motivated by retaliation or deterrence nor intended to sustain an agreed-upon market outcome*, but nevertheless emboldens price increases and weakens competitive incentives to reduce prices or offer customers better terms.” (emphasis added).

Shortly after the guidelines were published Carl Shapiro, then chief economist of the US DOJ Antitrust Division, gave a speech providing an illustrative example of PAC.³⁰ Shapiro describes a ‘4 to 3’ merger that “will enable the merged firm to become the industry price leader” and where “the merged firm’s two rivals will likely follow price increases that it initiates”. Shapiro explains that “[t]his pattern of behavior does not involve any agreement by the other two firms to be followers; doing so is in their own best interest. This pattern of behavior does not involve any agreement that the merged firm will punish the other two firms if they fail to follow; but all three firms know that the merged firm will likely rescind its price increase in that event. Thus, the anticipated pricing behavior does not involve reaching and enforcing an agreement, central elements of the explicit and tacit collusion, the two other forms of co-ordinated interaction.”

Harrington (2013) notes that PAC can be subsumed within the tacit collusion framework by adopting a broader interpretation of what it means to reach and enforce a common understanding, arguing that in the example above, the act of rescinding the price increase in the event that it is not matched would be considered the ‘punishment’.³¹ He notes, however, that “[w]here the 2010 Merger Guidelines are valid and constructive is in emphasizing that co-ordinated effects could emerge even where mutual understanding is far from the level that is associated with the concept of an agreement among firms.”

4.1.2 Effect of the merger on co-ordination

24. The second step is to determine whether the merger is likely to increase the likelihood or effectiveness of co-ordination. In principle, this is done by examining whether and how the merger impacts the factors above. Below are some common examples (not mutually exclusive or exhaustive):

- **Reduction in number of firms:** Co-ordination may be easier or more effective in a market with fewer firms.³² A horizontal merger directly reduces the number of firms in a market; whereas, non-horizontal mergers³³ may do so indirectly as a result of a successful foreclosure strategy.
- **Removal of maverick:** Pre-merger co-ordination may be significantly constrained by a maverick firm that plays a disruptive role, for example, because it faces different economic incentives. An

³⁰ See: <http://www.justice.gov/atr/public/speeches/264295.pdf>.

³¹ See *supra* note 26.

³² Australia Merger Guidelines (para 6.1), UK Merger Guidelines (para 5.5.19).

³³ EU Non-Horizontal Merger Guidelines (paras 83, 87, and 120).

acquisition that removes a maverick or alters its incentives could therefore increase the likelihood or effectiveness of co-ordination.³⁴

- **Increased symmetry:** Asymmetries between firms (e.g. in market shares, cost structures, degrees of vertical integration) may have constrained pre-merger co-ordination by making it difficult for them to settle on mutually acceptable terms. A merger could lead to greater symmetry between firms.³⁵
- **Increased transparency:** A vertical merger³⁶ could increase the level of market transparency by giving the merged firm greater access to non-public competitively sensitive information on upstream or downstream rivals (by virtue of its customer-supplier relationship with them). Similarly the acquisition of a minority interest³⁷ in a competitor could enhance the ability of the two firms to co-ordinate their behaviour through the flow of competitively sensitive information.
- **Increased multi-market contact:** A merger may enhance the degree of multi-market contact between a group of firms. This could enhance co-ordination by providing broader scope to punish deviations.³⁸

Box 2. Prevalence of co-ordinated effects theories of harm in US and EU merger cases

A number of studies suggest that co-ordinated effects theories of harm may be more commonly investigated (and more likely serve as the basis for enforcement action) in the US than the EU. Moreover, in the EU, intervention on the basis of co-ordinated effects theories of harm appear to be more heavily focused on mergers that would create a duopoly, i.e. “3 to 2” mergers.

Coate (2012) examines internal case files for 333 merger cases reviewed by the US FTC from 1993-2010 that involved three or fewer overlap markets.³⁹ After removing “2 to 1” (i.e. merger to monopoly) cases and cases for which substantial entry impediments could not be established, the author is left with 169 cases, for which 90 (53%) predominantly featured a co-ordinated effects theory of harm and 79 (47%) predominantly featured a unilateral effects theory. The co-ordinated effects cases faced an enforcement rate of 69% (62 cases) and the unilateral effects cases faced an enforcement rate of 76% (60 cases), implying a roughly even split of enforcement matters across the two theories. Of the 62 co-ordinated effects cases for which enforcement action was taken, 26 (42%) were classified as “3 to 2” mergers.

In a more recent study, Tucker (2013) examines US FTC data on Phase I merger screening memoranda for every case resulting in a Second Request (triggering Phase II) over the period August 2008 to August 2012. The author finds that co-ordinated effects concerns were raised by staff in 56% of cases, suggesting that co-ordinated effects theories of harm continue to be actively investigated.

³⁴ Canadian Merger Guidelines (paras 6.38-6.39), EU Horizontal Merger Guidelines (para 42), German Merger Guidelines (para 121), US Horizontal Merger Guidelines (p. 25).

³⁵ Australia Merger Guidelines (para 6.13), Canadian Merger Guidelines (para 6.37), UK Merger Guidelines (para 5.5.19).

³⁶ Canadian Merger Guidelines (para. 11.9), EU Non-Horizontal Merger Guidelines (paras 84–86).

³⁷ Canadian Merger Guidelines (para 10.5), US Horizontal Merger Guidelines (para 34).

³⁸ Canadian Merger Guidelines (para 6.33 and 11.9), EU Non-Horizontal Merger Guidelines (para 121)

³⁹ Limiting the sample to only include cases with three or fewer overlap markets helped ensure that there was sufficiently detailed information in the case file about each overlap market.

In contrast, Petit (2012) examines public information on European Commission merger investigations since 1989 and finds that the Commission has taken enforcement action on grounds of co-ordinated effects concerns in only 38 out of 270 (14%) decisions in which the theory was tested. Of these, the vast majority (32 or 84%) could be classified as “3 to 2” mergers.⁴⁰ This is consistent with Davies et al. (2011) which finds that co-ordinated effects concerns were investigated by the EC in only 2.5% of merger cases from 1990-2004, and enforcement action was taken in only 44 of the 386 markets (11%) concerned in those cases. Similarly a recent EC staff working paper⁴¹ states that co-ordinated effects cases have been “very rare” with the last intervention case being *ABF/GBI* in 2008.

4.2 Quantitative tools

25. Quantitative techniques to model the co-ordinated effects of mergers are not as developed and commonly used as the empirical methods for analysing unilateral effects. As stated in OECD (2011), “[t]he exact conditions under which the loss of a competitor will move the market from a competitive equilibrium to a collusive equilibrium, or from one collusive equilibrium to another, higher priced collusive equilibrium, are difficult to predict.” Since economic theory does not provide clear-cut results, the paucity of empirical techniques is not surprising.⁴²

26. There is very little empirical research that directly assesses the impact of mergers on the co-ordinated conduct of firms.⁴³ As Jayaratne and Ordover (2013) put it, “[w]ithout the seemingly clear-cut precision of the unilateral effects analyses, coordinated effects analysis is more likely to rely on a variety of indicators such as the increase in concentration and the presence of checklist factors.”⁴⁴

27. Indeed, this finds some support in agency merger guidelines. The US Horizontal Merger Guidelines state that, “the risk that a merger will induce adverse coordinated *effects may not be susceptible to quantification or detailed proof*. Therefore, the Agencies evaluate the risk of coordinated effects using measures of market concentration [...] in conjunction with an assessment of whether a market is vulnerable to coordinated conduct.” (emphasis added)⁴⁵ Similarly, the Australian Merger Guidelines state that “assessing whether a merger is likely to give rise to co-ordinated effects requires a close examination of the conditions prevailing in the relevant market and the likely effect of the merger on these conditions. This generally requires a *detailed qualitative assessment* of a range of factors [...] some of which may suggest conflicting conclusions.” (emphasis added).

⁴⁰ Interestingly this emphasis appears to be consistent with findings in the experimental literature on tacit collusion, see *supra* note 8.

⁴¹ European Commission Staff Working Document Accompanying White Paper Towards More Effective EU Merger Control, July 9, 2014. Available at: http://ec.europa.eu/competition/mergers/publications_en.html.

⁴² A study by Compte, Jenny and Rey (2002) is an exception, in that it develops a formal model to assess the impact of a merger on the incentives for tacit collusion. They study how capacity asymmetries in a market can affect co-ordinated conduct and apply their framework to the *Nestlé/Perrier* merger. The paper shows that, when industry capacity is limited and a merger increases capacity asymmetries, co-ordination becomes more difficult to sustain.

⁴³ Ganslandt and Norback (2004) study the mergers in Swedish retail gasoline markets. The authors find no evidence that increased concentration was conducive to better co-ordination.

⁴⁴ As stated in OECD (2011), Background note, “[t]hese questions require more qualitative analysis of issues such as transparency, excess capacity within the coordinating group and the identification of a credible ‘punishment mechanism’.”

⁴⁵ In contrast, regarding unilateral effects the US Horizontal Merger Guidelines state, “Where sufficient data are available, the Agencies may construct economic models designed to quantify the unilateral price effects resulting from the merger.”

28. Nevertheless, some advances are being made in the economic literature, particularly quantitative techniques based on merger simulation. However, these tools have seen limited usage in agency merger decisions to date, perhaps because they are difficult to operationalise within the time and data constraints of *ex ante* merger review. Appendix A provides an overview of the literature and a summary of some recent cases.

Questions (Merger control / Co-ordinated effects):

- Have you faced difficulties applying a co-ordinated effects theory of harm to mergers in your jurisdiction? Why? How common are co-ordinated effects cases compared to unilateral effects cases?
- In analysing whether a market is conducive to co-ordination, are certain factors (e.g. market transparency, history of collusion) considered more important than others? Is there any factor or set of factors that can be considered necessary or sufficient to establish that a market is vulnerable to co-ordination (or to at least create rebuttable presumptions)? How do you weigh a conflicting set of factors (i.e. situations where some factors seem to facilitate co-ordination, while others seem to complicate co-ordination)? Are results from the experimental literature on tacit collusion helpful?⁴⁶
- To advance a co-ordinated effects theory is it necessary to identify the competitive variables on which co-ordination would likely be based post-merger (e.g. price, output, capacity, market share, market allocation, etc.)? Are certain markets more conducive to one form over another?
- In demonstrating the causal effect of the merger on co-ordination, are certain theories more common than others, e.g., reduction in the number of firms, elimination of a maverick, increased symmetry, increased transparency? Is it more common to find co-ordinated effects cases based on a theory that the merger will strengthen pre-existing co-ordination, or based on a theory that the merger will move the market from a competitive equilibrium to a collusive one (and how does this distinction affect the analysis and available tools)?
- Have you applied quantitative techniques to the assessment of co-ordinated effects? If so, what tools have you found helpful? What are their strengths and weaknesses?
- What has been the reaction of the courts to cases based on co-ordinated effects theories of harm? What evidence have they found persuasive? How has quantitative evidence been assessed?

5. Provisions on abuse of dominance or monopolisation

29. Another possibility is to use abuse of dominance (or equivalent monopolisation- or misuse of market power-type) provisions to examine co-ordinated conduct in oligopoly markets that falls short of a cartel. While these laws are normally directed at anti-competitive conduct engaged in by a single dominant firm, rather than a group of firms, some jurisdictions recognise a concept of “collective” or “joint” dominance under their respective laws. In principle, one could imagine those concepts being used to prohibit abusive (e.g. exclusionary) conduct engaged in by a group of firms with collective market power which helps them sustain a tacitly collusive outcome. However, as explained below, there is a lack of international consensus on whether, and in what circumstances, abuses of collective dominance should be pursued, and enforcement action appears to be relatively sparse. It may be that, in practice, the level of concertation that would be required for a group of firms to abuse a collectively dominant position is so high that the conduct can effectively be dealt with under cartel laws.⁴⁷ In any case, it is possible that

⁴⁶ For example, see Engel (2015).

⁴⁷ Or that the risk of such cases arising and not being covered by cartel laws is so low that it does not justify expanding abuse of dominance policies to deal with it in light of the potential chilling effects that this could

jurisdictions may benefit from experience sharing on this front. We summarise the approach of a few jurisdictions below.

5.1 United States

30. In the United States, Section 2 of the Sherman Act applies to “Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize...” However, apart from the ‘combine’ or ‘conspire’ prongs, Section 2 applies primarily to single-firm conduct. Hawk and Motta (2008) note that Section 2 cases based on theories of “shared monopoly” or “joint monopolization” have been rejected by US lower courts.⁴⁸ For instance, in *Rebel Oil* the court found,

“To pose a threat of monopolization, one firm alone must have the power to control market output and exclude competition...An oligopolist lacks this unilateral power. By definition, oligopolists are interdependent. An oligopolist can increase market price, but only if the others go along.

[...]

We recognize that a gap in the Sherman Act allows oligopolies to slip past its prohibitions...but filling that gap is the concern of Congress, not the judiciary.”⁴⁹

31. Hawk and Motta (2008) suggest that the courts have rejected these cases because of the difficulty in fashioning an appropriate and effective remedy to deal with oligopolistic interdependence.⁵⁰ and because it would be inconsistent to treat oligopoly pricing as an offence when monopoly pricing is not itself unlawful. However, Hemphill and Wu (2013) find that the reasoning of the courts is not so clear. They argue that while the case law does not permit tacit collusion or “parallel pricing” to be treated as monopolisation as such, it may (and should) permit cases based on a theory of “parallel exclusion” – namely “conduct, engaged in by multiple firms, that blocks or slows would-be market entrants”.⁵¹

produce. For example, by raising the prospect that the second or third largest firms in the market could be found to hold a dominant position (by virtue of being part of a collectively dominant group), a tough stance on abuse of collective dominance could dampen the incentives of these firms to compete aggressively against the market leader. This concern was expressed in a 2007 speech by Gerald Masoudi, then Deputy Assistant Attorney General of the US DOJ Antitrust Division, regarding the approach to joint dominance under the People’s Republic of China’s draft Antimonopoly Law, see: <http://www.justice.gov/atr/public/speeches/225357.htm>. Under Article 19 of China’s Antimonopoly Law a rebuttable presumption of dominance is triggered when one firm represents half (50%) or more of the total market, two firms represent two-thirds (66%) or more of the market, or when three firms represent three-quarters (75%) or more of the market. However, in the latter two circumstances, the presumption does not apply to firms having a market share of less than 10%.

⁴⁸ For further discussion and case citations see ABA Comments Canada (April 15, 2009), pp. 5-6.

⁴⁹ *Rebel Oil Company Inc v. Atlantic Richfield Company*, 51 F3d 1421 (citations omitted).

⁵⁰ Gudofsky et al. (2010) make the same argument in respect of joint dominance under Canadian competition law, suggesting that “in many cases, the proposed remedy or cure (which could take the form of pricing regulation or structural changes) could be worse than the disease.”

⁵¹ The authors argue that such conduct would be harmful, that it would not necessarily require an explicit agreement because it may be a dominant strategy for all of the firms involved, and prohibiting it would be congruent with the treatment of similar exclusionary conduct by monopolies. Iacobucci and Winter (2011) make similar arguments in respect of Canada’s abuse of dominance provisions, arguing that parallel

5.2 *India*

32. In India, Section 4 of the India Competition Act 2002⁵² provides that “No enterprise *or group* shall abuse its dominant position” (emphasis added). However, the law effectively defines a “group” as two or more enterprises under the same management or control or linked by minority shareholdings. Therefore, the law does not cover situations where a group of independent firms (in an oligopoly) hold collective market power. As a result, the Competition Commission of India has rejected a number of complaints of collective dominance on the basis that it is not covered by the law.⁵³ In 2012, a bill was introduced that, among other reforms, would amend the dominance provision to capture potential abuses of collective dominance, by inserting “jointly or singly” after the word “group”.⁵⁴ The amendment drew both support⁵⁵ and criticism⁵⁶ after it was introduced; however, the bill ultimately lapsed with the dissolution of Parliament in 2014.

5.3 *European Union*

33. In the EU, Article 102 of the TFEU explicitly contemplates an “abuse by one *or more undertakings* of a dominant position” (emphasis added).⁵⁷ However, the case law under Article 102 has been somewhat unclear on the circumstances required for a group of firms to be found to hold a dominant position (i.e. collective dominance).

34. In *Italian Flat Glass*⁵⁸ the European Court of First Instance (now the General Court) found,

“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, by virtue of that fact, together they hold a dominant position vis-à-vis the other operators on the same market.” (emphasis added)

exclusionary practices that substantially lessen competition are also “amenable to a practical remedy”, unlike parallel pricing.

⁵² The Competition Act, 2002 No. 12 of 2003, as amended by The Competition (Amendment) Act, 2007. Available at: www.ieee.org/documents/competition_act_2002_india.pdf.

⁵³ For example, Case No. 78/2013 <http://www.cci.gov.in/May2011/OrderOfCommission/262/782013.pdf>; and Case No. 49/2012 <http://www.cci.gov.in/May2011/OrderOfCommission/492012.pdf>.

⁵⁴ The proposed amendment and related materials are available at: <http://www.prsindia.org/billtrack/the-competition-amendment-bill-2012-2571/>.

⁵⁵ Support was based on gap cases that in theory could be addressed under the new law. For example, see <http://www.cci.gov.in/images/media/ResearchReports/Collective%20Dominance.pdf>.

⁵⁶ Criticism was largely focused on the business uncertainty that would be created if the bill were enacted. See [http://www.prsindia.org/uploads/media/Competition%20\(A\)%20Bill,%202012/SCR-Competition%20\(A\)%20Bill.pdf](http://www.prsindia.org/uploads/media/Competition%20(A)%20Bill,%202012/SCR-Competition%20(A)%20Bill.pdf).

⁵⁷ A similar construction exists in other jurisdictions. For example, in Canada the abuse of dominance provisions apply to situations where “one *or more persons* substantially or completely control, throughout Canada or any area thereof, a class or species of business” (emphasis added). For a brief discussion of the Competition Bureau’s approach to “joint dominance” see Guidelines on The Abuse of Dominance Provisions available at: <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/03497.html>.

⁵⁸ Joined cases T-68/89, T-77/89 and T-78/89, *Società Italiana Vetro v. Commission* [1992] ECR II-1403. Decision available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:61989TJ0068>.

35. Petit (2012) notes that this decision sparked considerable legal and scholarly debate over what could constitute sufficient “economic links” for purposes of showing collective dominance. Later, in *Compagnie Maritime Belge*⁵⁹, the European Court of Justice found 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.”

[...]

“The existence of a collective dominant position may therefore flow from the nature and terms of an agreement, from the way in which it is implemented and, consequently, from the links or factors which give rise to a connection between undertakings which result from it. Nevertheless, 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)

36. While the earlier portions of this passage appear to restrict the circumstances under which collective dominance could be found, the references in the latter portion to “other connecting factors” and to an “economic assessment” of the “structure of the market” seem to leave the door open for a finding of collective dominance based purely on the market conditions that give rise to tacit collusion in a tight oligopoly. Indeed, such an interpretation appears to have drawn support in the EU mergers case law that developed under the ‘dominance standard’ of the EU Merger Regulation (EUMR), where cases like *Gencor*⁶⁰, and eventually *Airtours*⁶¹, equated collective dominance with tacit collusion. However, as noted in Petit (2012) there is debate about whether the concept of a dominant position requires a more restrictive interpretation under Article 102 of the TFEU (an *ex-post* tool) than under the merger control provisions (an *ex-ante* tool) in light of their different objectives, remedial challenges associated with *ex-post* enforcement and potential chilling effects.⁶²

37. Regardless of the legal definition of collective dominance in the EU, Hawk and Motta (2008) suggest that, in practice, collective dominance has been pursued under Article 102 only in limited circumstances where there were clear links between the firms involved, for example through contracts, exchanges of products, cross-shareholdings, common membership in a trade association or shipping conference, etc. Further, collective dominance is not addressed in the European Commission’s guidance on enforcement priorities relating to abuse of dominance.⁶³ However, Hawk and Motta (2008) note that

⁵⁹ Joined cases C-395/96P and C-296/96P, *Compagnie maritime belge transports SA (C-395/96P), Compagnie maritime belge transports SA (C-396P) and Dafra-Lines A/S (C-396/96P) v. Commission* [2000] ECR I-1365. Decision available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:61996CJ0395>.

⁶⁰ T-102/96 *Gencor Ltd. v. Commission*, [1999] ECR II-753.

⁶¹ T-342/99, *Airtours plc. v. Commission*, [2002] ECR II-2585.

⁶² See also Mezzanotte (2010), which argues that “a problem of detection and costly error restricts dramatically the ability of the Commission to combat tacit collusion by using Article 102.”

⁶³ Guidance on the Commission's Enforcement Priorities in Applying Article 82 of the EC Treaty to Abusive Exclusionary Conduct by Dominant Undertakings, available at: <http://ec.europa.eu/competition/antitrust/art82/> (“This document sets out the enforcement priorities that will guide the Commission's action in applying Article 82 [now 102] to exclusionary conduct by dominant undertakings... Such a position may be held by one undertaking (single dominance) or by two or more undertakings (collective dominance). This document only relates to abuses committed by an undertaking holding a single dominant position.”).

national competition authorities have been less reluctant to bring collective dominance cases; a point reinforced by Petit and Neyrinck (2011).

38. The discussion above ignores other important questions such as the types of conduct that could constitute an *abuse* of collective dominance, assuming collective dominance could be proved. Are these the same categories of abuses that are considered under single-firm dominance or, in principle, could they be narrower (or broader)?⁶⁴ Would all members of the collectively dominant group need to engage in the abusive conduct (at the same time), or could there be an individual abuse of a collectively dominant position? And what remedial approaches might apply?

39. The brief discussion above illustrates the murkiness of the concept of an abuse of collective dominance. In particular, commentators appear to disagree on whether it is a useful provision to have; some jurisdictions' laws recognise it (e.g. Canada, EU) while others do not (e.g. India, US). One of the ones that does not recognise it has sought amendments to include it; while one of the ones that does recognise it has elected not to prioritise it. Of course, cross-jurisdictional comparisons on a single provision may not be helpful, as the approach towards abuse of collective dominance in a particular jurisdiction may well depend on a holistic reading of the relevant competition statute(s), in particular the scope of the relevant cartel or merger control provisions or other "gap-filling" tools that may exist.

40. The American Bar Association (ABA) in their comments on abuse of dominance guidelines in other jurisdictions⁶⁵ have referred to "considerable uncertainty and variability" regarding approaches to joint dominance or monopolisation internationally. Notably, collective dominance is not currently addressed in the ICN's Recommended Practices on Dominance⁶⁶, or in its Workbook on the Assessment of Dominance⁶⁷. As a result, there may be value in experience sharing between jurisdictions on the questions below.

⁶⁴ For instance, Petit and Neyrinck (2011) note that, "the notion of abuse of collective dominance remains uncharted territory. Many authorities and courts seem to err on the side of caution, and consider the issue through the lenses of the single firm dominance case-law (with the classic exploitation/exclusionary dichotomy). Often, cases are dismissed (or even abandoned) short of uncertainties on the existence of an abuse. After all, many conventional abuses entail aggressive commercial practices (predatory pricing, rebates, bundling, etc.), which are incongruent with the behavioral stability that is typical of collective dominance situations."

⁶⁵ See ABA Comments Canada (April 15, 2009) (recommending further clarity on "joint dominance" to avoid the chilling of pro-competitive conduct by businesses seeking to comply with the guidelines), ABA Comments Malaysia (June 15, 2012) (same), ABA Comments COMESA (August 20, 2013) (strongly recommending that COMESA delete all references to collective dominance in their draft guidelines).

⁶⁶ ICN (2008), 'Recommended Practices on Dominance/Substantial Market Power Analysis', available at: <http://internationalcompetitionnetwork.org/uploads/library/doc317.pdf>.

⁶⁷ ICN (2011) 'Unilateral Conduct Workbook Chapter 3: Assessment of Dominance', available at: <http://www.internationalcompetitionnetwork.org/uploads/library/doc752.pdf>. The Workbook does, however, acknowledge that some jurisdictions recognise the concept.

("In some jurisdictions the dominance definition also applies to several companies possessing market power jointly, called "collective dominance." However, this Workbook addresses only single-firm conduct, not collective dominance.").

Questions (Abuse of dominance / Monopolisation):

- Does your competition law recognise the possibility of an abuse of collective dominance, or joint monopolisation? If so, what is the policy justification? Is it thought to address an actual or perceived gap left by laws directed at anti-competitive agreements?
- How is collective dominance or joint monopolisation established? Does it require demonstration of structural or economic links between the firms? Is it sufficient to show that the market is conducive to tacit collusion (together with evidence of parallel conduct or a lack of vigorous competition)? Are there presumptions or safe-harbours based on combined market share?
- What types of conduct could be considered an abuse of collective dominance? Are these the same for single-firm dominance? Does the abusive conduct need to be engaged in by all members of the collectively dominant group (at the same time)?
- What remedial solutions are envisaged for situations of abuse of collective dominance? Are they the same for single-firm dominance? Can they be directed at the underlying structural or behavioural factors supporting the collectively dominant position, or are they restricted to sanctioning/remedying the alleged abusive conduct?
- What cases have you brought? Have you published any prioritisation principles or guidance on your enforcement approach?

6. Additional tools

41. A number of jurisdictions have turned to other instruments to address potential gaps. This section briefly explores five such instruments:

- Unfair methods of competition (US);
- Law targeting a particular facilitating practice (Australia);
- Market investigations (UK, Mexico, Iceland);
- Law targeting a particular market structure (Israel); and,
- (Interim) Price control provisions (Belgium).

42. Some of these tools are broadly constructed, while others are targeted at particular practices, market structures or price developments. They also differ in remedial approaches with some used to prohibit/sanction conduct, and others providing the possibility of altering the underlying structural conditions of the market. The existence of these additional tools would seem to suggest (at least implicitly) a legislative concern about the sufficiency of standard antitrust tools (in these jurisdictions). Of course, it must be acknowledged that these tools have been adopted in different economic and legal environments, and in some cases for different or broader purposes than those discussed in this paper. Moreover, actual enforcement experience with these tools appears to be relatively limited to date. This could suggest that gap cases are rare in practice, or perhaps that agencies are applying these tools cautiously in light of potential false positive/chilling effects that could result from over-enforcement. Also, some of the tools are relatively new, so it remains to be seen how they may be applied as experience grows. Regardless, they provide useful examples of the different features that a tool dealing with gap cases might have.

6.1 *Unfair methods of competition*

43. Under Section 5 of the FTC Act, the US FTC has the power to prohibit “unfair methods of competition”. The Supreme Court has held that Section 5 extends beyond the Sherman Act and other US antitrust laws.⁶⁸ Over time the FTC has occasionally relied on this power to tackle various conducts that have anti-competitive effects, but would be challenging to pursue under cartel or monopolisation provisions. One example is unilateral communications of information to competitors with anti-competitive effects, or so-called “invitations to collude”. The policy concern with such communications is that they may provide competitors with information that allows them to reach a collusive equilibrium.⁶⁹ However, a unilateral act, standing alone, does not satisfy the “agreement” requirement under Section 1 of the Sherman Act. Thus, the FTC has pursued this conduct under Section 5, reaching settlements in a handful of cases since the 1990s.⁷⁰

44. Several observations can be made about Section 5. First, it is a flexible, “principles-based” prohibition rather than a “rule” or “form-based” one.⁷¹ Second, it can only be enforced by the FTC, an expert administrative body, limiting the potential for opportunistic use in private litigation. Third, in stand-alone cases violating Section 5 (i.e. cases that have not been alleged to violate the other antitrust laws) the FTC has tended to restrict its remedies to prohibiting future recurrence of the conduct (e.g. prohibiting future unilateral communications of the type that gave rise to concerns) rather than seeking damages or punitive sanctions.

45. Nevertheless, there has often been debate about the reach of Section 5, and the potential it may have to chill legitimate business conduct in the absence of limiting principles or agency guidelines on what may constitute an “unfair method of competition”.⁷² In the 1980s, courts overturned cases such as *Boise Cascade*⁷³ and *Ethyl*⁷⁴ at least in part because of the difficulty in articulating some limiting principles that would provide businesses with greater certainty on the line between lawful and unlawful conduct.

⁶⁸ See *FTC v. Sperry & Hutchinson Co.*, 405 US 233 (1972) (Finding that the statute, its legislative history, and prior cases empower the Commission under Section 5 to define and proscribe an unfair competitive practice, even though the practice does not infringe either the letter or the spirit of the antitrust laws); and *FTC v. Indiana Federation of Dentists*, 476 US 447 (1986) (“The standard of “unfairness” under the FTC Act is, by necessity, an elusive one, encompassing not only practices that violate the Sherman Act and the other antitrust laws [...] but also practices that the Commission determines are against public policy for other reasons”)(dictum).

⁶⁹ See OECD (2012a). For instance, an extreme case would be one where a firm privately discloses detailed future pricing intentions to its competitors in a concentrated market.

⁷⁰ *Ibid.* See discussion related to *U-Haul International* (2010), *Valassis Communications* (2006), *Stone Container* (1998), *Precision Moulding* (1996), *AE Clevite* (1993), *YKK (U.S.A.)* (1993), and *Quality Trailer Products Corp.* (1992).

⁷¹ For example see *Ethyl Corp v FTC*, 729 F.2d 128, 136 (2d Cir. 1984) (“Congress, in the process of drafting Sec. 5, gave up efforts to define specifically which methods of competition and practices are competitively harmful and abandoned a proposed laundry list of prohibited practices for the reason that there were too many practices to define and many more unforeseeable ones were yet to be created by ingenious business minds.”).

⁷² For a recent example, see speech by FTC Commissioner Joshua D. Wright (February 26, 2015) “Section 5 Revisited: Time for the FTC to Define the Scope of Its Unfair Methods of Competition Authority” available at: www.ftc.gov/public-statements/2015/02/section-5-revisited-time-ftc-define-scope-its-unfair-methods-competition.

⁷³ *Boise Cascade Corp. v. FTC*, 637 F.2d 573 (9th Cir. 1980). (“In this setting at least, where the parties agree that the practice was a natural and competitive development in the emergence of the southern plywood industry, and where there is a complete absence of evidence implying overt conspiracy, to allow a finding of a

6.2 Law targeting a particular facilitating practice

46. Australia provides an example of a more targeted, form-based prohibition. In 2011, the Australian Competition and Consumer Commission (ACCC) was granted new powers to prohibit “anti-competitive price signalling and information disclosures”.⁷⁵ The provisions include: 1) a *per se* prohibition on private disclosures of price-related information to competitors where doing so is not in the ordinary course of business;⁷⁶ and 2) a *general prohibition* on disclosures of information⁷⁷ (in public or private) for purposes of substantially lessening competition in a market.⁷⁸ Remedies include civil penalties, which can be up to the greater of AUD 10 million, 10% of a business’s annual turnover or three times the benefit gained.

47. The new provisions were designed to address a gap in Australian law relating to anti-competitive activities by firms that fall short of an ‘arrangement or understanding’ as interpreted by the courts.⁷⁹ However, in addition to focusing on a particular type of facilitating practice, the provisions currently only apply to the banking sector and only in relation to the taking of deposits and making advances or loans. While it has been possible to extend the provisions, by regulation, to other sectors, this has not been done to date.

48. An independent competition policy review panel set up by the Australian government (the Harper Review) has recently recommended repealing these new provisions in favour of expanding Australia’s anti-competitive agreement provisions to cover ‘concerted practices’ that have the purpose or likely effect of substantially lessening competition (similar to the EU).⁸⁰ The ACCC has suggested that such expansion should be broader than the definition suggested by the review panel and that further thought should be given to prohibiting certain concerted practices on a *per se* basis.⁸¹

section 5 violation on the theory that the mere widespread use of the practice makes it an incipient threat to competition would be to blur the distinction between guilty and innocent commercial behavior.”).

⁷⁴ *Ethyl Corp v FTC*, 729 F.2d 128, 136 (2d Cir. 1984) (“When a business practice is challenged by the Commission, even though, as here, it does not violate the antitrust or other laws and is not collusive, coercive, predatory or exclusionary in character, standards for determining whether it is “unfair” within the meaning of § 5 must be formulated to discriminate between normally acceptable business behavior and conduct that is unreasonable or unacceptable. Otherwise the door would be open to arbitrary or capricious administration of § 5; the FTC could, whenever it believed that an industry was not achieving its maximum competitive potential, ban certain practices in the hope that its action would increase competition... the Commission owes a duty to define the conditions under which conduct claimed to facilitate price uniformity would be unfair so that businesses will have an inkling as to what they can lawfully do rather than be left in a state of complete unpredictability.”).

⁷⁵ Further information on the provision can be found on the ACCC’s website at www.accc.gov.au/business/anti-competitive-behaviour/price-signalling.

⁷⁶ The *per se* prohibition does not require proof of an anti-competitive purpose or effect, and applies whether past, current or future price information is disclosed.

⁷⁷ The general prohibition covers information related to price, capacity or commercial strategy.

⁷⁸ The prohibitions include a number of exceptions such as disclosure of pricing information to a related corporate body, disclosure authorised by or under another law or required under securities rules, and accidental disclosures.

⁷⁹ See OECD (2012a) (“Australia’s general approach of rules-based competition law, combined with the outcomes of numerous judicial decisions, has led to a relatively unique situation in Australia whereby it was considered that facilitating practices could not be effectively targeted under the existing laws.”).

⁸⁰ Final Report of the Harper Review (March 2015) available at <http://competitionpolicyreview.gov.au/final-report/>.

⁸¹ ACCC’s Response to the Draft Report of the Harper Review (November 2014), available at: www.accc.gov.au/system/files/Competition%20Policy%20Review%20-%20ACCC%20submission%20to%20Draft%20Report%20-%2026%20November%202014.pdf.

6.3 *Market investigations*

49. A somewhat more regulatory (as opposed to prohibition-oriented) tool for addressing gap cases is provided by the market investigations regime in the UK. The UK Competition and Markets Authority (CMA) has the power to conduct broad-based market investigations⁸² to consider whether there are features of a market that give rise to an adverse effect on competition (AEC). “Features” is broadly defined under the law and includes both the structure of the market concerned (e.g. market concentration, barriers to entry), as well as the conduct of any market participant (e.g. suppliers or customers). If the CMA finds that a feature, or combination of features, of a market give rise to an AEC, the CMA has the power to impose a range of remedies⁸³ (both behavioural and structural, subject to reasonableness and proportionality considerations) and/or make recommendations to relevant sector regulators or government. The CMA’s decisions can be appealed to the UK Competition Appeal Tribunal.

50. One of the theories of harm that the CMA can pursue in a market investigation is “coordinated conduct by firms”. This is explicitly envisioned as going beyond conduct caught by cartel and abuse of dominance provisions.⁸⁴ To date the theory has been examined in several market investigations, including:

- **Energy (ongoing):**⁸⁵ Investigating a theory of “tacit co-ordination through public price announcements”, i.e. whether the six large energy firms may be using the announcements to signal their intentions to rivals and for rival suppliers to be in a position to adjust their behaviour accordingly.
- **Aggregates, cement and ready-mix concrete:**⁸⁶ Concluding that structure and conduct in the cement sector was restricting competition by aiding co-ordination between the three largest producers. Remedies required the divestiture of a cement plant to create a new producer and introduced measures to limit the flow of information and data on cement production and price announcements.
- **Statutory audit service:**⁸⁷ Investigating but ultimately dismissing a theory that market conditions were conducive to co-ordination or that the “Big 4” audit firms engaged in tacit collusion.

⁸² Further information and guidance on the UK’s market investigation regime is available on the CMA website at: www.gov.uk/competition/markets.

⁸³ The ability to impose remedies is one of the features that distinguish a market investigation from a “market study”, a more common advocacy-oriented tool used by many competition authorities that allows the authority to better understand the functioning of a market and normally only results in a report or non-binding recommendations (unless an infringement of the law is detected).

⁸⁴ See ‘CMA Guidelines for market investigations: Their role, procedures, assessment and remedies’ (“The sole focus of any market investigation is upon the effects on competition of possible features of the market [...]. While enforcement action on some cases of coordinated behaviour may fall within Article 101 of the TFEU or Chapter 1 of CA98, the [CMA] may investigate all forms of coordination. Any form of coordination has the potential to reduce strategic uncertainty among competitors to the detriment of their customers and, depending on the degree, may thereby result in an AEC.”); and ‘CMA guidance on Market Investigation References’ (“Market features that can lead to [an AEC] in an oligopolistic market can be wider than the conditions that the case law has found to be necessary for collective dominance, that is, for oligopolists successfully to engage in tacit collusion. Furthermore, what qualifies as an abuse of collective dominance is underdeveloped in the case law. For these reasons a market investigation reference will be able to address wider competition concerns than could be addressed by a CA98 case and might, therefore, be a better way of proceeding.”)

⁸⁵ See www.gov.uk/cma-cases/energy-market-investigation.

⁸⁶ See www.gov.uk/cma-cases/aggregates-cement-and-ready-mix-concrete-market-investigation.

⁸⁷ See www.gov.uk/cma-cases/statutory-audit-services-market-investigation.

51. Although the UK power is uncommon internationally, some other jurisdictions have recently introduced similar powers. In 2014, Mexico introduced a provision allowing the competition authority to conduct market investigations to identify, and if necessary order measures to remove, “barriers to competition”. These barriers to competition are defined broadly to include “any structural feature of the market, fact, or conduct of economic agents...that impede or distort the process of free competition”.⁸⁸ The measure was introduced, at least in part, because of research showing that Mexican households spend nearly a third of their budget on products produced in monopolistic or “highly oligopolistic” markets.⁸⁹

52. Similarly, in 2011, the Iceland Competition Authority (ICA) was granted a market investigations power that enables it “to take action against any situation or behaviour that restricts competition, even though that behaviour does not violate the prohibition rules in the Competition Act itself.”⁹⁰ As with market investigation powers in Mexico and the UK, remedies include the possibility of structural divestitures. The ICA’s first market investigation is directed at the fuel market.⁹¹

6.4 Law targeting a particular market structure

53. The Israeli Antitrust Authority (IAA) provides a unique example. In 2011, a new law on “Concentration Groups” (oligopolies) was added to the Restrictive Trade Practices Act.⁹² The law was introduced in recognition of “the need to respond to the competition problems resulting from the existence of oligopolies in the Israeli economy.”⁹³ The law operates when the following three conditions are met:

- A small group of firms collectively account for more than 50% of the market;
- There is limited competition, or conditions for limited competition,⁹⁴ between the members of the group or in the market in which they operate; and
- Taking remedial steps may prevent harm or a risk of significant harm to competition, or may significantly increase competition or create the conditions for a significant increase in competition in the market.⁹⁵

54. When those conditions are satisfied, the Director General (DG) of the IAA can direct members of the ‘Concentration Group’ to take actions to reduce switching costs or barriers to entry, or to cease activities that make it easier for members to match one another’s behaviour (such as information sharing). The DG may also apply to an independent tribunal for structural divestitures. The power thus resembles the

⁸⁸ Unofficial translation of Article 3.IV of the Mexican competition law (*Ley Federal de Competencia Económica*) available in Spanish only at: <http://www.cfc.gob.mx/cofece/index.php/normateca>.

⁸⁹ OECD (2011), ‘Assessment and recommendations’, in OECD Economic Surveys: Mexico 2011, p.31.

⁹⁰ See Iceland’s Annual Report on Competition Policy Developments to the OECD, 2012, DAF/COMP/AR(2013)4. An English translation of the relevant legislation is available at: <http://en.samkeppni.is/competition-rules/legislation/>.

⁹¹ See <http://en.samkeppni.is/published-content/news/nr/2209>.

⁹² An unofficial English translation of the law is available on the IAA’s website at: www.antitrust.gov.il/eng/Antitrustlaw.aspx.

⁹³ Israel’s Annual Report on Competition Policy Developments to the OECD, 2011, DAF/COMP/AR(2012)5.

⁹⁴ In summary, the law states that conditions for limited competition will be found if the market has barriers to entry combined with two or more of the following conditions: (1) switching costs; (2) cross-shareholdings; (3) symmetric market shares; (4) product homogeneity; (5) large number of transactions; and (6) market transparency.

⁹⁵ Contrast this requirement with the statement of the court in *Ethyl Corp v FTC*, *supra* note 74.

UK market investigation power in its remedial approach, but follows a more form-based analysis. It also bears some resemblance to a collective dominance provision, absent a requirement to demonstrate an abusive act.

55. Two Israeli competition law experts have argued that the new law is important given Israel's small economy:

56. "The importance of this new power stems from the fact that it enables the [IAA] to overcome one of the most troubling Achilles' heel in competition law: dealing with oligopolistic co-ordination. This is a big loophole, especially in small economies in which the natural conditions in the market can only support a small number of firms in most of the markets and entry barriers are often quite high. Indeed, other tools which attempted to deal with this problem have been problematic."⁹⁶

57. So far the IAA has applied this new provision to exclusive contracts between baby formula suppliers and hospitals, and to actions undermining new entry in the loading and unloading of shipping containers at ports.⁹⁷

6.5 *(Interim) Price control provisions*

58. In 2013, the Belgian Competition Authority (BCA) was granted a limited form of price control power through the introduction of a new provision into the Code of Economic Law aimed at "competition and price evolution".⁹⁸ In particular, where the Belgian Price Observatory, a separate administrative body organised under the Ministry of Economy, detects a "problem regarding prices or margins, abnormal price changes, or a structural problem in the market" it can make a report to the BCA. The BCA will then hear from interested parties and decide whether it is appropriate to impose "interim measures", which would be effective for up to six months. Decisions of the BCA are subject to appeal to the Brussels Court of Appeal. During this time, the Minister of Economy would be expected to submit a plan to the government that provides for a "structural change to the functioning of the market in the sector concerned". Thus, the BCA's interim price control power may be thought of as a form of temporary price regulation while the government works out a longer-term solution.⁹⁹

59. There are a number of outstanding questions about the application of this new provision. First, it is not yet clear what types of price developments or market structures will be considered problematic under the law. The language is quite broad, and its inclusion in the Code would tend to suggest that it goes beyond the type of issues that would be caught by existing cartel and abuse of dominance provisions. Similarly, it is not yet clear what interim measures the BCA may impose. Commentators have suggested that such measures likely encompass, among other things: price caps, price freezes, removal of indexation clauses, and reducing the number of tariff options.¹⁰⁰ The law specifies that interim measures should only be imposed in cases where it is urgent to avoid a situation likely to cause serious and immediate injury to businesses or consumers that would be difficult to repair, or that would injure the general economic interest. The law has not yet been used so it remains to be seen if and how it will be applied.

⁹⁶ Indig and Gal (2013).

⁹⁷ Israel's Annual Report on Competition Policy Developments to the OECD, 2013, DAF/COMP/AR(2014)5.

⁹⁸ Further information about this provision can be found on the BCA's website at http://economie.fgov.be/en/entreprises/competition/price_evolution/.

⁹⁹ Permanent regulation of oligopoly pricing has been considered a theoretical possibility in the academic literature, e.g. for a review see Sagi (2007). However, with the exception of certain natural monopoly-type settings that call for sectoral regulation, ongoing price regulation in oligopolies has largely been dismissed as unworkable and/or overly intrusive in markets.

¹⁰⁰ See "The Belgian Competition Authority receives price control powers", Linklaters alert, December 2013, available at: www.linklaters.com/pdfs/mkt/brussels/131212_Alert_Price_Control_Powers.pdf.

Questions (Additional tools)

- Does your jurisdiction have an additional tool (or have you advocated for one) to address competition issues in oligopoly markets beyond the standard antitrust tools dealing with anti-competitive agreements, abuses of dominance, and mergers? What was the policy justification for this additional tool? What types of “gaps” is it designed to address? What are its strengths and weaknesses?
- In an ideal world, what features (procedures, substantive standards, sanctions/remedies) would such a tool have from the point of view of:
 - Type I and Type II error;
 - Predictability / Legal certainty / Potential chilling effects;
 - Practical administrability / Flexibility / Resource requirements;
 - Fairness to parties involved;
 - Interaction with private enforcement
- Are additional tools to address “gap” cases more likely to be required in certain types of economies (e.g. in smaller or more remote economies that can only support a small number of firms, economies with heavier reliance on sectors prone to collusion, etc.)?

7. Concluding remarks

60. The notion of a potential enforcement gap whereby oligopolists may be able to reach and sustain collusive outcomes without violating applicable cartel laws is a perennial concern for competition law and policy. In tension with this concern is the need to calibrate legal rules so that they are not over-reaching or unpredictable. This paper discusses the strengths and weaknesses of various enforcement tools that exist across jurisdictions with a view to stimulating discussion. A number of points emerge from this paper:

- Merger control provides a potential *ex-ante* solution to the risk of tacit collusion by enabling competition authorities to remedy or prohibit mergers that would render markets more conducive to co-ordination. However, co-ordinated effects theories of harm can be challenging to apply in practice. Qualitative factors used to assess whether markets are conducive to co-ordination can sometimes be mixed and difficult to weigh, and quantitative tools are relatively under-developed or perhaps difficult to apply within the time/informational constraints of *ex-ante* merger review.
- Some jurisdictions recognise a concept of an abuse of “collective” or “joint” dominance under their respective laws while others do not. In principle, such provisions could be used to prohibit abusive (e.g. exclusionary) conduct engaged in by a group of firms that helps them sustain a tacitly collusive outcome.
- A number of competition authorities have access to additional enforcement tools that can be used to address potential “gap” cases in their respective jurisdictions. These tools differ both in substance and in remedial approach. Some are used to prohibit particular business practices that can facilitate collusive outcomes (e.g. certain forms of information exchange that fall short of cartel laws), while others are more regulatory and can be used to remedy particular features of markets or market structures (and, in one case, pricing developments) that are found to be having adverse effects.
- Striking the right enforcement balance in oligopolistic markets is a persistently challenging problem. Acknowledging that there may be good reasons for differences across jurisdictions, it may still be useful for competition authorities to share experiences for potentially developing some common terminology, principles or analytical approaches.

APPENDIX A – QUANTITATIVE TOOLS FOR ANALYSING THE CO-ORDINATED EFFECTS OF MERGERS

1. This appendix provides an overview of the recent literature on quantitative tools to analyse the co-ordinated effects of mergers. It also summarises some recent cases.
2. The recent empirical literature identifies two main quantitative approaches building on either 1) merger simulation or 2) upward pricing pressure analysis.
3. The box below provides some preliminaries on merger simulation.

Merger simulation in unilateral effects analysis

The simulation of merger unilateral effects develops from the choice of an economic model to describe how firms compete in the specific market being analysed, prior to the merger. The model is calibrated, using before merger industry data such as prices, cost or margin data, and market shares. With the calibrated model at hand and the new post-merger ownership structure, the simulations illustrate post-merger prices and other variables of interest. Therefore, under the assumption that the merger is the only key change in the industry, the effects of the merger are assessed by comparing the relevant variables before and after the merger.

As to the choice of model, a form of the price-competition “Bertrand” model is often used in the assessment of mergers in markets with differentiated products. In this model, firms compete on the prices they charge customers and supply the quantities demanded by consumers at those prices. The main assumptions rely on identifying which groups of products or brands are closer substitutes, when this cannot be estimated directly from the data with econometric techniques. Other choices of model are possible in the context of merger simulation, as discussed by Werden and Froeb (2011). However, as noted by Epstein and Rubinfeld (2004), this model is widely used because it is “intuitively plausible and analytically tractable”. Product differentiation confers some market power to firms. The framework, depending on the industry at stake, can allow for a varying degree of market power, from very limited to quite significant.

Fitting the simulation model on pre-merger data entails the choice of a consumer demand function. There are a number of functional forms used in demand estimation, as reviewed by ICN (2011) and Epstein and Rubinfeld (2004). Using market data, including on prices, cost or margins, and quantities sold, the model calibration produces estimates of own-price elasticities and cross-price elasticities between all products in the market. These estimates provide an indication of market power and also of the pattern of substitution when prices change.

Assuming that the type of competition does not change after the merger and that the demand function (and therefore elasticities) remains the same, the merger simulation model computes the post-merger equilibrium with the changed product ownership. Predicted merger effects typically differ (significantly) depending on the demand functional form. The dependability of the results thus depends on the correct specification of the demand model, any assumptions needed to input cost or margins data (which are less readily available than information on prices and volumes), and the firms’ modelled competition behaviour (i.e. the choice of model). OECD (2011), among others, discusses the advantages and limitations of merger simulation in a unilateral effects context.

1. Merger simulation models

4. A strand of the literature builds on merger simulation models designed for unilateral effects assessment to develop an approach suitable to co-ordinated effects. Earlier papers on co-ordinated effects by the authors reviewed in this section include Kovacic et al. (2006), Davis (2006), Sabbatini (2006) and Davis and Sabbatini (2011).

5. Kovacic et al. (2009) argue that the framework for modelling the unilateral effects of mergers can be enriched to describe co-ordinated interaction and to quantify any resulting payoffs. The authors model co-ordination among firms as a (further) merger of the co-ordinating entities. Within this framework, they assess the incentives to co-ordinate after the merger and the group of firms which would achieve higher payoffs from co-ordination. The underlying rationale is that “the larger the payoffs from coordinated behaviour, the more likely are firms to incur the costs and risks associated with coordinating their behaviour.”

6. As in many unilateral effects simulation models, Kovacic et al. (2009) assumes a model of differentiated products price competition, i.e. services are assumed to be imperfect substitutes. The authors apply this modelling approach to the *Hospital Corporation of America (HCA) v. FTC* merger. The model is calibrated to the pre-merger hospital services market, ensuring that actual market shares are also the equilibrium market shares of the model. The comparison of the pre-acquisition co-operative payoffs with the post-acquisition co-operative payoffs, for each groups of “co-operating” firms, reveals to what extent profits would increase, and for which group of firms it would be most profitable. For instance, co-operation among the large hospitals, in conjunction with the merger, would increase combined profits by 65% relative to the pre-merger outcome.

7. On a similar line of research, Kovacic et al. (2009), Gayle et al. (2011) model competition in a procurement market. They apply the above approach to the 2009 merger between chemical manufacturers BASF and Ciba,¹⁰¹ which was assessed both in the US and in the EU.¹⁰² In the relevant market, manufacturers compete in procurement tenders to supply chemicals to buyers. The pre-merger market shares are used to calibrate the model, under the assumption that the market equilibrium outcome is non-co-operative. Given the prior history of collusion between the dominant firm in the market and BASF, the authors investigate whether the merger increases the benefits from co-operation for these two firms. They find that, prior to the merger, co-ordination would have increased their joint profits by 30% while, after the merger, Ciba-BASF and the dominant firm would have increased payoffs by 40% by co-ordinating. The study finds that the benefits from co-ordination increase more when the merging parties have comparable market shares and, after the merger, their size is similar as that of the largest firm in the market. In addition, Gayle et al. (2011) conclude that, in their model, cost efficiencies can increase the payoffs from co-ordinated effects.

8. Kovacic et al. (2009) and Gayle et al. (2011) assume that co-ordinating firms behave like a single entity that is formed by the merger of all co-ordinating entities. However, as noted by Jayaratne and Ordover (2013), “tacit and explicit collusion may take the form where the coordinating firms do not maximize joint profits and act like a single firm but instead adopt rules and procedures that sacrifice profits in return for stabilizing coordination.” In this case, the modelling approach may not readily extend to the analysis of co-ordination.

9. Furthermore, the above analytical framework provides a model to measure the scale of potential incentives to co-operate, but it does not prove that firms would indeed co-operate. In a number of markets, with and without mergers, modelling co-operation would boost profits due to the internalisation of

¹⁰¹ FTC Press Release, April 2, 2009, “FTC Intervenes in BASF’s Proposed \$5.1 Billion Acquisition of Ciba Holding Inc.,” available at <http://www.ftc.gov/opa/2009/04/basf.shtm>

Case No COMP/M.5355-BASF/ CIBA, , available at http://ec.europa.eu/competition/mergers/cases/decisions/m5355_20090312_20212_en.pdf.

¹⁰² The application focuses on one of the chemicals produced by both parties. The product is DMA3, “which is an intermediate in the production of chemicals that are used in the water treatment and paper industries, or as a specialty monomer” (Gayle et al., 2011).

customers' diversion to other products. Furthermore, modelling tacit co-operation as a full merger suggests that this is an upper bound, since tacit co-operation and/or the alignment of incentives is in no way equivalent to full ownership and joint management.

10. Davis and Huse (2010) rely on a merger simulation model to assess the likelihood of co-ordination in the network server industry. Their paper is the "first empirical coordinated effects merger simulation model in a differentiated market." The innovation of their study is that, unlike the papers mentioned above, their model is not calibrated but builds on parameters that are empirically estimated from the data. They study the effects (unilateral and co-ordinated) of HP's 2002 acquisition of Compaq. On the supply side, they assume Bertrand price competition with differentiated products. The demand function for servers is estimated using a rich database including price and quantity information of servers sold by firm, in a given region over time.¹⁰³ The authors simulate the effects of the merger in a static context and in a dynamic model, enabling them to analyse the repeated interactions¹⁰⁴ among competitors. Their modelling framework allows for asymmetric costs, multi-product firms and firm-specific discount factors. Based on the estimated price elasticities, the authors compare profits resulting from co-operation, from defecting from co-operation and from a non-cooperative equilibrium. A key insight from this work is that in a dynamic framework, allowing for repeated interactions, the merger reduces the difference between the payoff from co-ordination and the payoff from defection, therefore reducing the incentives for co-operation. This implies that "static game" models may overestimate the incentives to co-operate.

11. Davis and Huse (2010) extend their model to allow, among other factors, for (i) multi-market contact; (ii) a competitive fringe; and (iii) the threat of fines imposed on tacit colluders by an antitrust authority. In the more general case when firms compete in many markets, the authors find similar results as in the benchmark case, i.e. the "relative incentive to collude post-merger [falls] relative to the situation pre-merger." In the second extension, that of a competitive fringe model, the authors relax the initial assumption that all the firms in the market co-ordinate in the collusive equilibrium. They focus instead on alternative sets of co-ordinating firms. Davis and Huse (2010) find that some firms are better off when the dominant firm group is smaller than under industry-wide co-ordination. They explain that, in general, it is expected that a smaller group of co-ordinating firms can achieve lower prices and lower profits. However, the authors note that some of the firms that are tacitly co-ordinating in a group may be very constrained by outsiders, while others may not. In this case, it may be optimal for the group to 'sacrifice' the profits of the firms that are the most constrained. When Davis and Huse (2010) extend the model to incorporate antitrust action, they find that punishment is likely to deter collusion in the market they investigate, under strong assumptions about the size of fines and the likelihood of detection.

12. Sabbatini (2014), in reviewing this literature, notes that "[these studies] are all based on the implausible assumption of only one collusive equilibrium." The author therefore allows for different collusive mechanisms, to recognise that if firms realise that "a specific collusive scheme (e.g. joint profit maximisation) is unfeasible", they are likely to explore alternative ways of co-ordinating instead of reverting to perfect competition. This study suggests a range of indicators which could help competition agencies in the assessment of a merger. Such indicators vary with the characteristics of the market, i.e. product differentiation, the number of competitors and their symmetry. The approach proposed by Sabbatini (2014) can be implemented with the same information collected for a unilateral merger

¹⁰³ In addition, the dataset includes data on product characteristics. The authors estimate a multinomial logit model and focus on two separate markets, i.e. servers priced below \$4,000 and servers priced between \$4,001 and \$10,000.

¹⁰⁴ In the repeated game, payoffs are defined as the net present value of future profits, appropriately discounted. Firm-specific discount rates are estimated on the basis of stock market and financial statements information. In order to assess the stability of the collusive equilibrium, Davis and Huse (2010) introduce incentive compatibility constraints for each firm.

simulation. In the study, the analytical framework is applied to the 2011 merger between AT&T and T-Mobile in the US, which was abandoned by the parties following a challenge by the US agencies. Following other studies, competition is modelled as Bertrand price competition with product differentiation.¹⁰⁵ The paper evaluates and compares the effects of the proposed merger with those of a merger between a smaller competitor, i.e. Sprint and T-Mobile. The results suggest that the merger between AT&T and T-Mobile, which would have led to a market dominated by two leading firms but with a smaller competitor, would be less anti-competitive than a merger resulting in three competitors of similar size. Sabbatini (2014) notes that his results contrast the indications provided by HHI comparisons, since concentration alone is not a good proxy for the risk of collusion.

2. Upward pricing pressure measures

13. A second strand of the literature builds on upward pricing pressure (UPP) measures for unilateral effects analysis.¹⁰⁶ The box below, which reproduces text from OECD (2011), summarises the features of this methodology in a unilateral effects context.

Upward pricing pressure measures in unilateral effects analysis

The UPP approach is recognised in the US Horizontal Merger Guidelines as a quantitative method providing a simplified indication of whether the merger would give the parties a unilateral incentive to increase prices. In a merger between firms that sell substitute products, the incentives of the parties in setting their prices will change *post merger*. A price increase by one of the merging firms will lead to lower sales and profits, but will be at least partially compensated by increased sales and profits by the other merging party. Due to this internalisation of diverted sales, which was absent before the merger, both parties have an incentive to increase prices after the merger.

As OECD (2011) explains, “[a]n approximation to the extent of the upward pricing pressure can be captured by two variables: the diversion ratio between the two firms and the firms’ gross margins. The greater is the diversion ratio from Firm 1 to Firm 2, the greater the competitive constraint imposed by Firm 2 on Firm 1 prior to the merger and so the greater the lessening of competitive constraint as a result of the merger. The higher the gross margin pre-merger, the greater the cost of losing sales (as a result of a price rise) pre-merger and so the lesser the cost post-merger if those sales are captured by the other merging party. So for a given gross margin, the greater the diversion ratio, the greater the incentive to raise prices post-merger. Likewise, for a given diversion ratio, the greater the gross margin pre-merger, the greater the incentive to raise prices. This effect will be reduced if the merger leads to marginal cost efficiencies as these will tend to put downward pressure on prices.”

There are various measures which implement the basic intuition. The version of UPP that is incorporated in the US Horizontal Merger Guidelines is the Gross Upward Pricing Pressure Index (GUPPI).¹⁰⁷ As explained in OECD (2011), “GUPPI is defined as follows:
$$\text{GUPPI for product 1} = \frac{\text{Value of sales diverted to product 2}}{\text{Revenues on volume lost by product 1}}$$
”

Source: OECD (2011), Background paper, pp. 39 – 40.

¹⁰⁵ Sabbatini (2014) draws on publicly available information on market shares, average prices and consumer numbers. In addition, his assumptions are in line with those incorporated in the upward pricing pressure measure developed by Moresi et al. (2011) and applied to the same merger.

¹⁰⁶ Farrell and Shapiro (2010) proposed the Upward Pricing Pressure (UPP) index, building on an earlier idea by O’Brien and Salop. OECD (2011) provides an explanation of these measures.

¹⁰⁷ For a discussion of the derivation of this measurement, see pages 722ff of Shapiro, C. 2010. “The 2010 Horizontal Merger Guidelines: from hedgehog to fox in forty years”, *Antitrust Law Journal*, vol. 77.

14. Moresi et al. (2011) propose a measure of upward pricing pressure for the case of parallel accommodating conduct. The measure is based on each firm's unilateral incentives to raise prices, before and after a merger. As for the case of unilateral effects analysis, the firms' incentives depend on assumptions on 'diversion' factors, and are affected by the margins firms obtain on the product. The model captures a very specific form of co-ordinated interaction, i.e. parallel accommodating conduct (PAC), introduced by the 2010 US Horizontal Merger Guidelines. As stated in the Guidelines, and described above in this paper, PAC "includes situations in which each rival's response to competitive moves made by others is individually rational, and not motivated by retaliation or deterrence nor intended to sustain an agreed-upon market outcome."

15. The authors develop the index for a model of price competition with differentiated products and study the interaction between the two leading firms in the market (and only these two firms). They analyse a situation where each of the two leading firms decides whether to increase the price of its product. Moresi et al. (2011) develop the conditions under which a price increase would be rational from the points of view of both firms. For the firm initiating the increase, the temporary loss of profit should be less than the net present value of the gains realised in all subsequent periods. The second firm would have an incentive to match the price increase if the permanent discounted change in profits was greater the short-term gain from not following the price increase. These two conditions are used to narrow down the set of price increases that would be sustainable under PAC.

16. Moresi et al. (2011) define their Co-ordinated Price Pressure Index (CPPI) as "the largest price increase that the two co-ordinating firms could be willing both to initiate and follow." The increase in the CPPI following a merger can be used to assess the likelihood of co-ordinated conduct.

17. One benefits of the CPPI is that it can be calculated with limited data and does not involve complex calculations. It requires data (or assumptions) on margins, elasticities, quantities and diversion ratios. However, there are clear limitations to this approach. The authors explain that the index is not designed to fully capture the market equilibrium, unlike merger simulation models, and warn that the CPPI should be assessed in conjunction with other evidence. Moreover, when there is already some pre-merger co-ordination, the CPPI may not increase much after the merger and therefore the index may be misleading. The analysis is based on a number of assumptions. Each firm takes the current price charged by its competitor as given and assumes that the competitors will not initiate a price increase. Moreover, the only responses available to the other firm are to match the other firm's price increase (in percentage terms) or to keep its price constant.

18. The CPPI framework is applied, as in Sabbatini (2014) to the US mobile market, focusing on the leading firms Verizon Wireless and AT&T. They find that the planned merger between AT&T and T-Mobile would raise concerns among parallel accommodating conduct between Verizon and AT&T.¹⁰⁸ These results differ from those obtained by Sabbatini (2014). This is explained by the fact that Moresi et al. (2011) focuses on the interaction between two firms only and therefore cannot capture the effects of smaller competitors in disrupting co-ordination, as is the case in the model used by Sabbatini (2014).

3. Some remarks on quantitative methods

19. Werden and Froeb (2011) provide an account of the debate about the use of merger simulation versus the UPP index in unilateral effects mergers. Some authors, such as Farrell and Shapiro (2010), have argued that merger simulation is demanding in terms of data requirements and difficult to understand by non-specialists. They also find that merger simulation is open to risks of mis-specification of the

¹⁰⁸ Besen et al. (2013) provides an account of the economic analysis conducted by Sprint's advisers in the proposed transaction. This includes some discussion of co-ordinated effects.

underlying model of competition, especially in complex industries. They advocate the use of the UPP index as a screening device in merger control. Simons and Coate (2010) point out that merger simulation models require “reasonably precise estimates of a demand system”, which the authors view as not feasible. Other economists, such as Epstein and Rubinfeld (2010) and Hausman (2010), have argued in favour of merger simulation. One of the points raised was that merger simulation delivers results in terms of potential price increases, which are easy to understand.

20. In the case of co-ordinated effects, Gayle et al. (2011) argue that “screens that are based on upward pricing pressure are not adequate in mergers where co-ordinated effects are a potential concern.” Sabbatini (2014) also emphasises the limitations of the CPPI, which does not incorporate responses from the non-co-ordinating firms.¹⁰⁹

21. All the techniques rely on assumptions and these should therefore be made clear so that the results can be interpreted correctly. This is also the case for relatively simple measures such as UPP and CPPI. In addition, while price elasticities should ideally be estimated econometrically they are often calibrated or assumed, which reduces the reliability of the results. Finally, as shown in a merger simulation context by Davis and Huse (2010), a static framework may overestimate the importance of co-ordinated effects and this should be taken into account when drawing conclusions based on a simplified model that does not incorporate dynamic effects.

4. Examples of economic evidence used in enforcement cases

22. The methodologies described above do not yet appear to be implemented in merger cases by competition authorities (with the exception of a Portuguese case, described below). This does not mean, however, that quantitative, alongside qualitative, evidence is not considered at all. Competition authorities appear to be making use of various indicia such as the stability of pricing, margins and market shares over time or across markets, rival reactions to price announcements, price-concentration analyses, price correlation among competitors, customer switching behaviour, etc. These may be used to complement the qualitative assessment of whether markets are conducive to co-ordination.¹¹⁰ Below is a brief summary of some relevant cases in the EU, Portugal and UK.

23. In the 2008 ABF/GBI decision,¹¹¹ the European Commission argued that the acquisition by food company ABF of GBI’s yeast business would have led to tacit collusion. The transaction was cleared, but subject to remedies submitted by the parties. In this case, among other data, the Commission analysed price levels in the countries affected by the transaction. Price trends over time were found to differ significantly across different countries and this observation contributed to the geographic market definition adopted by the Commission. In addition, the Commission analysed individual firms’ pricing. For instance, the decision notes that, in the Spanish compressed yeast market, the “average prices of all three competitors remained relatively stable in the years previous to 2006. As of 2006, there was a simultaneous increase in prices for all three producers.”¹¹² The three incumbents did not react when a smaller competitor gradually reduced its prices over

¹⁰⁹ Sabbatini (2014) notes that “Moresi et al. (2011) propose an extension of UPP, currently used for the assessment of the unilateral effect. The main weakness of this extension derives from the bilateral shape of the index, appropriate for the unilateral effect but unsound for evaluating the coordinated effect, which generally involves more than two firms.”

¹¹⁰ For instance, in a 2014 cement merger the European Commission examined market shares over time and found that there was very limited variation in some geographic areas, despite significant demand variations. The evidence analysed also included switching behaviour and gross margins over time. See Commission Decision of 9 September 2014, case M.7054 – Cemex / Holcim Assets.

¹¹¹ Commission Decision of 23 September 2008, case M.4980 — ABF/GBI Business.

¹¹² Commission Decision of 23 September 2008, case M.4980 — ABF/GBI Business, paragraph 222.

a period of time. This evidence was among the factors assessed in the discussion of the ability to reach an understanding on the terms of co-ordination, including previous indications of past co-ordination.

24. An earlier case on co-ordinated effects, which relied on economic evidence, was the joint venture between Sony and BMG.¹¹³ The Commission cleared the joint venture in 2007 and, following an appeal by Impala, an association of independent music publishers, the Court of Justice¹¹⁴ “endorsed the economic model of tacit coordination, elaborating on its most important aspects” (Neven and de la Mano, 2009).¹¹⁵ In its Statement of Objections, the Commission argued that the merger would “reinforce a collective dominant position on the music recording market based on price co-ordination of the music majors (Universal, Sony-BMG, Warner and EMI)” (Luebkings and Ohrlander, 2009).

25. The Commission looked for evidence of co-ordination by examining pricing trends in the five largest European markets (France, Germany, Italy, Spain and United Kingdom) over the period 1998 – 2003. The data analysed included the average wholesale prices charged by the five major music companies for their best-selling albums: it was found that they followed a similar pattern. Subsequently, this finding was altered in the decision, based on an extensive price analysis. The data encompassed the contracts between the majors and at least ten most important digital music service providers, in 15 European markets, for the time period 2004 – 2007. Based on this evidence, the Commission concluded that the companies “seek to individually maximise their returns on recorded music provided in digital form” (Commission Decision M.333, paragraph 102).

26. In a banking merger notified in 2006¹¹⁶ to the Portuguese Autoridade da Concorrência, a merger simulation model was used to assess potential co-ordinated effects, following the approach of Kovacic et al. (2006). The merger between BCP and BPI was approved with remedies, including the disposal of the banks’ stakes in the largest credit card acquirer in Portugal and the divestiture of branches. Brito et al. (2008) describe the analysis and the results. They investigate the market for mortgage loans and the market for short-term credit (i.e. overdraft and secured current accounts) granted to small and medium-sized enterprises. The authors estimate a demand function in each of the two markets, using a large cross-sectional dataset of customer information obtained from the largest banks in Portugal. Their estimates of elasticities show that the demand for mortgage loans and the demand for short-term credit are relatively elastic to price.¹¹⁷ The banks interaction is modelled as Bertrand price competition with product differentiation. Brito et al. (2008) find that the merger would increase the profitability of tacit collusion between the three largest banks. These banks’ profits in the mortgage loans market would be higher by 54% if they co-operated post-merger. The increase would be even more marked in the short-term credit market, where joint profits would increase by 275% in the event of collusion.

27. In the UK, a joint venture between Anglo American and Lafarge was notified in 2011 and reviewed by the OFT (Phase 1) and the Competition Commission (Phase 2).¹¹⁸ The joint venture concerned the companies’ UK activities in the production of cement, aggregates, asphalt and ready-mix concrete. The

¹¹³ Commission Decision of 3 October 2007, case M.333 — Sony/BMG.

¹¹⁴ Court of Justice, Judgment of 10 July 2008 in Case C-413/06 P, Bertelsmann and Sony Corporation of America v Impala.

¹¹⁵ The history of the case, from the initial authorisation in 2004, is described by Luebkings and Ohrlander (2009).

¹¹⁶ Concentration operation Ccent. 15/2006 - BCP/BPI.

¹¹⁷ The elasticity of demand depends on the assumed market share of the outside option. However, for assumed market shares ranging from 5% to 30%, the demand for individual banks remains elastic.

¹¹⁸ <https://www.gov.uk/cma-cases/anglo-american-plc-lafarge-s-a-merger-inquiry#anticipated-joint-venture-between-anglo-american-plc-and-lafarge-sa>.

authorities argued that the joint venture could lead to a significant lessening of competition. Among other theories of harm, they included the risk of co-ordinated effects. They found that, as a result of the transaction, co-ordination in the bulk cement market would become significantly more likely in the future. The final report outlines the framework of analysis and the evidence reviewed by the authorities.

28. The assessment was carried out by looking at evidence of pre-existing co-ordination and at the three conditions set out in the UK Merger Guidelines, namely (i) ability to reach and monitor co-ordination; (ii) internal sustainability; and (iii) external sustainability. In order to reach conclusions on these issues, the data and information analysed included:

- *Production, sales and capacity*: the authorities found that the shares of production were relatively stable over time, despite significant changes in demand over that period, changes in ownership and substantial excess capacity. They also found that cement producers have many sources of information available to them on industry outcomes, which could help them co-ordinate. In addition, the data showed that spare capacity would enable cement producers to punish deviations from a potential collusive outcome.
- *Consumer behaviour*: the data analysed included the regularity of purchases, the concentration of the customer base and a survey on the incidence of multi-sourcing. This information fed into the assessment of whether firms could infer deviations from observing market outcomes.
- *Price announcements*: the authorities conducted an analysis of the extent to which realised price increases followed price increase announcements. The authorities concluded that “price announcement letters could assist the UK cement producers in coming to a common understanding on the timing and direction of price movements.”¹¹⁹
- *Price concentration analysis of cement sales*: the results were not fully conclusive. The analysis indicated that Lafarge’s cement prices were not significantly affected by the other two manufacturers, i.e. Cemex and Hanson. The authority recognised that these estimates could be consistent with two alternative scenarios: (i) co-ordination between the manufacturers; or (ii) vigorous competition. However, in light of the other evidence, it was considered to be consistent with pre-existing co-ordination in the market.

¹¹⁹ Competition Commission (2012), A report on the anticipated construction materials joint venture between Anglo American PLC and Lafarge S.A., Paragraph 6.148.

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