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DP16904

Common Ownership and Mergers between Portfolio Companies

Roman Inderst and Stefan Thomas

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Discussion Paper DP16904
Published 15 January 2022
Submitted 11 January 2022

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Abstract

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JEL Classification: L21, L22, L41

Keywords: Common ownership, Herfindahl-Hirschman Index, horizontal effects, innovation competition, Merger Control, Unilateral Effects

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Version 23 July 2019

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The current debate on the competitive risks of common ownership has focused on whether passive index investments soften competition among portfolio companies. However, even if one concedes, *in arguendo*, that this is the case, it remains unclear in what way this bears on the analysis of horizontal mergers between portfolio companies. The EU Commission in *Dow/DuPont* and *Bayer/Monsanto* has alleged that common ownership is “an element of context in the appreciation of any significant impediment to effective competition”. In that respect we hypothesize that it should not be presumed that common ownership in itself increases anticompetitive effects of a merger between portfolio companies. Instead we posit that this depends on the facts of the case. The existence of common ownership might even mitigate post-merger unilateral effects if compared to the pre-merger counterfactual. We test our hypothesis on price competition as well as on innovation competition. Eventually, we map our conclusions onto the legal principles governing the burden of proof in merger cases.

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I. INTRODUCTION

The welfare effects of common ownership are being discussed controversially.² The core of the idea behind the alleged harmfulness is that common shareholders are deemed to prefer higher overall market profits over individual profits of a single firm.³ It is being alleged that portfolio companies under common ownership will internalize this assumed objective of their owners, which in turn will give them incentives to unilaterally increase prices. While some authors call for new structural remedies to limit the conjectured risks resulting from common ownership,⁴ the EU-Commission considers common ownership a phenomenon that should be assessed already under the existing EUMR when it comes to mergers between portfolio companies. Our article relates to this second part of the phenomenon.

It is not the purpose of our paper, however, to assess the underlying assumptions of common owners exerting influence on their portfolio companies to increase prices. Rather, we accept these conjectures as a hypothesis. Also, we will not deal with the question of whether the acquisition of minority stakes by common shareholders in portfolio companies might give rise to unilateral effects. In Europe, the acquisition of non-controlling minority shareholdings does not trigger jurisdiction under Article 3 EUMR.⁵ Although some authors suggest that common ownership by several investors in rivaling firms can amount to a situation of *de facto* joint control under Art. 3 EUMR⁶, this view is unconvincing for various reasons. It does not reconcile with the Commission's stipulation in its Horizontal Merger Guidelines that for *de facto* joint control to arise, the position of a minority shareholder must be akin to that of a blocking position.⁷ That is not the case for minority stakes of common owners.⁸ In any event, we do not strive to elaborate further on the issue of *de facto* joint control in this article. Also, we do not harbor the ambition to analyze whether share acquisitions of index funds can amount to a concentration under the Clayton Act, as it has been suggested.⁹ Therefore, our article will not elaborate on the implications of share acquisitions in portfolio companies. Rather it will deal with the substantive analysis of horizontal mergers between portfolio companies. That is where the subject of common ownership has already

² For an overview on the existing strands of literature see Ulrich Schwalbe, *Common Ownership and Competition – The Current State of the Debate*, 9 JECL&P, 1-8 (2018).

³ Einer Elhauge, *Essay: Horizontal Shareholding*, 129 Harvard L.Rev. 1267-1317 (2016); Einer Elhauge, *New Evidence, Proofs, and Legal Theories on Horizontal Shareholding*, 4 January 2018, at 33-36, available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3096812 (last accessed 26/06/2019); Einer Elhauge, *How Horizontal Shareholding Harms Our Economy - And Why Antitrust Law Can Fix It* (April 11, 2019), available at SSRN: <https://ssrn.com/abstract=3293822> or <http://dx.doi.org/10.2139/ssrn.3293822> (last accessed 26/06/2019); Eric A. Posner, Fiona M. Scott Morton & E. Glen Weyl, *A Proposal to Limit the Anti-Competitive Power of Institutional Investors* 81 Antitrust L.J. 669.

⁴ For an overview on proposals without endorsing specific action see OECD, *Common Ownership by Institutional Investors and its Impact on Competition*, Background Note by the Secretariat, 5-6 December 2017, (prepared by Antonio Copabianco), DAF/COMP(2017)10, p. 37, available at: [https://one.oecd.org/document/DAF/COMP\(2017\)10/en/pdf](https://one.oecd.org/document/DAF/COMP(2017)10/en/pdf) (last accessed 26/06/2019); Eric A. Posner, Fiona M. Scott Morton & E. Glen Weyl, *supra* note 3, making the proposal of limiting share ownership of institutional investors in rivaling firms on oligopolistic markets; see also Dorothy Lund, *The Case against Passive Shareholder Voting*, 43 The Journal of Corporation Law, 493 (2018).

⁵ Unlike the German antitrust laws, for example.

⁶ German Monopolies Commission, Main Report XX (2016), para. 678, available at: https://www.monopolkommission.de/images/HG21/HGXXI_Gesamt.pdf (last accessed 26/06/2019); Germany, *Common Ownership by Institutional Investors and its Impact on Competition*, Background Note by the Secretariat, 5-6 December 2017, DAF/COMP(2017)87, para. 21, available at: [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DAF/COMP/WD\(2017\)87&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DAF/COMP/WD(2017)87&docLanguage=En) (last accessed 26/06/2019); Elhauge, *New Evidence, Proofs, and Legal Theories on Horizontal Shareholding*, *supra* note 3, at 33-36.

⁷ See EU Commission, Consolidated Jurisdictional Notice under Council Regulation (EC) No 139/2004 on the control of concentrations between undertakings, OJ 2008 C 95/1, para. 77.

⁸ Rejecting the idea of control in terms of Article 3 EUMR through common minority shareholdings Riccardo Fadiga, *Horizontal shareholding within the European competition law framework: assessment and a way forward*, 40 E.C.L.R. 157-165 (2019).

⁹ Elhauge, *New Evidence, Proofs, and Legal Theories on Horizontal Shareholding*, *supra* note 3, pp. 33-6; Elhauge, *How Horizontal Shareholding Harms Our Economy - And Why Antitrust Law Can Fix It*, *supra* note 3.

gained traction in the European decisional practice. The EU-Commission has in *Dow/DuPont*¹⁰ and in *Bayer/Monsanto*¹¹ crafted the idea that the mere existence of common ownership can contribute to a competitive impediment in a horizontal merger between portfolio companies. Additionally, the Commission is of the view that impediments resulting from common ownership are not confined to price effects but that they can also relate to innovation competition.

In the following, we venture to test these ideas. While we do not undertake to assess whether the Commission's allegations on the effects of common ownership were convincing in the two named cases, we want to find out whether it is possible to rely on the default rule that common ownership increases the horizontal effects resulting from a merger between commonly owned portfolio companies. We posit that even if it were to be assumed that common ownership has the inherent propensity to impede competition, it cannot be concluded from here that a merger between commonly owned portfolio companies has a larger detrimental effect on prices or innovation activity than it would have absent common ownership. Based on our findings, we conclude that without a thorough analysis of the means of minority influence in a given case, of the shareholder structure on the affected market and on adjacent markets, and of the effects of the horizontal merger on efficiency, it is not possible to conclude from common ownership on the likeliness of competitive harm to result from the considered merger.

Our analysis of horizontal effects (II.) starts with an assessment of the current practical relevance of common ownership based theories of harm (A.). Subsequently, we outline the conceptualization of common ownership in a horizontal merger setting (B.). Our main contribution then is to show that common ownership, provided it has an effect on firms' strategies at all, may mitigate the post-merger price effects, though we also describe circumstances when it might reinforce an upward pricing pressure (C.). A substantive merger analysis that seeks to integrate the presence of common ownership must therefore take both possibilities into consideration. We further turn to the implications common ownership may have on post-merger innovation competition (D.). We then address the standard of proof for theories of harm based on common ownership (E.). We close with final remarks (III.).

II. COMMON OWNERSHIP AND MERGERS BETWEEN PORTFOLIO COMPANIES

A. Relevance in Practice

As alluded to above, the Commission has referred to the alleged harmfulness of common ownership in the analysis of horizontal mergers between portfolio companies. The basic idea behind it is that common ownership is deemed to impede competition beyond what market concentration based on HHI¹² would indicate.¹³ Accordingly, if market concentration increases through a horizontal merger, the anti-competitive effects precipitated by it are deemed to be fostered by the sheer existence of common ownership in the relevant portfolio market. The theory of harm is based on the hypothesis that a horizontal merger on a market where common

¹⁰ Commission 27/03/2017, Case M.7932 *Dow/DuPont* Annex 5.

¹¹ Commission 21/03/2018, Case M.8084 *Bayer/Monsanto* paras. 177, 208-29: "thus, [...] common shareholding in these industries are to be taken as an element of context in the appreciation of any significant impediment to effective competition that is raised in this Decision."

¹² The Herfindahl-Hirschman Index (HHI) is the sum of the squares of the market shares of the firms within the market.

¹³ Commission 21/03/2018, Case M.8084 *Bayer/Monsanto* para. 228.

ownership is an issue leads to an even greater harm to effective competition than what would occur *ceteris paribus* absent common ownership.

While the question of whether and how common ownership shapes the effects of a horizontal merger has, to our knowledge, not been addressed prominently in literature, there is already plenty of scholarly writing on the assessment of common ownership per se, which has not, however, yielded clear results.¹⁴ While some authors argue that competition is impeded,¹⁵ others deny that the underlying idea is conceptually sound and empirically verified.¹⁶ It is not the purpose of this paper to weigh in here. Rather, we assume the validity of this hypothesis *in arguendo*. The research focus for the remainder of this article relates to the conclusions that must be drawn from this hypothesis for the assessment of horizontal mergers between portfolio companies. We strive to test whether it is convincing to assume a positive correlation between the prevalence of common ownership on the one hand and the risks to effective competition resulting from a horizontal merger on the other.

Antitrust agencies are still at odds over the risk potential of common ownership. Leading representatives of the U.S. DOJ and U.S. FTC have been quoted to have publicly displayed reluctance towards the idea of establishing theories of harm based on common ownership.¹⁷ The European Commission, on the other hand, has already embraced common ownership as an element of horizontal merger analysis. In its *Dow/DuPont* decision it has looked at existing common ownership in the business sector and found it to aggravate the competitive concerns.¹⁸ Similar statements can be found in *Bayer/Monsanto*.¹⁹ Although the existence of common ownership in neither of these cases appears to have become dispositive to the outcome of the overall assessment, the Commission has spent considerable efforts on making its claims of competitive harm.²⁰ Against this backdrop, common ownership has gained practical relevance in EU-merger enforcement. It cannot be pigeonholed as an exclusive matter of scholarly debate anymore.

¹⁴ There is an equally impressive body of scholarly work on the bearings of common ownership on corporate governance and investor protection. A major debate orbits around the question whether the lack of an exit possibility for index funds limits their shareholder influence or increases it in that it gives them incentives to actively influence their portfolio companies. See Lucian A. Bebchuk & Scott Hirst, *Index Funds and the Future of Corporate Governance: Theory, Evidence, and Policy*, Columbia Law Review (2019) (forthcoming), available at SSRN: <https://ssrn.com/abstract=3282794>, at 63-64 (last accessed 26/06/2019); Lucian A. Bebchuk, Alma Cohen & Scott Hirst, *The Agency Problems of Institutional Investors*, 89 Journal of Economic Perspectives 108-09 (2017); Lucian A. Bebchuk & Scott Hirst, *The Specter of the Giant Three*, 99 Boston University L.Rev. 721-741 (2019); Lund, *supra* note 4; Jill E. Fisch, Assaf Hamdani & Steven D. Solomon, *The New Titans of Wall Street: A Theoretical Framework for Passive Investors*, University of Pennsylvania L.Rev. (2019) (forthcoming), available at SSRN: <https://ssrn.com/abstract=3192069> (last accessed 26/06/2019); Ian R. Appel, Todd A. Gormley & Donald B. Keim, *Passive investors, not passive owners*, 121 Journal of Financial Economics 111-141 (2016); Jan Fichtner, Eelke M. Heemskerk & Javier Garcia-Bernardo, *Hidden power of the Big Three? Passive index funds, re-concentration of corporate ownership, and new financial risk*, 19 Business and Politics 298-326 (2017).

¹⁵ See the literature *supra* note 3.

¹⁶ Daniel P. O'Brien & Keith Waehrer, *The Competitive Effects of Common Ownership: We know less than we think*, 81 Antitrust L.J. 729-776 (2017); Daniel P. O'Brien, *The Competitive Effects of Common Ownership: Ten Points on the Current State of Play*, OECD Hearing on Common Ownership by institutional investors and its impact on competition, DAF/COMP/WD(2017)97, available at [https://one.oecd.org/document/DAF/COMP/WD\(2017\)97/en/pdf](https://one.oecd.org/document/DAF/COMP/WD(2017)97/en/pdf) (last accessed 26/06/2019).

¹⁷ Speaking at a conference at Fordham University School of Law, head of the US DOJ's antitrust division, Makan Delrahim was quoted as follows: "Let's remember, from where we sit as enforcers of the antitrust laws, concerns about common ownership need to be rooted in theories of harm that can be proven in a court of law", FTC chairman Joseph Simons and FTC commissioner Noah Philips reportedly expressed sceptical views, too, reported by Ben Remaly for Global Competition Review, *Delrahim: common ownership theories must be proven in court*, report of 2 May 2019, available at <https://globalcompetitionreview.com/article/usa/1190854/delrahim-common-ownership-theories-must-be-proven-in-court> (last accessed 26/06/2019).

¹⁸ Commission 27/03/2017, Case M.7932 *Dow/DuPont* Annex 5.

¹⁹ Commission 21/03/2018, Case M.8084 *Bayer/Monsanto* para. 228.

²⁰ See the extensive outline of the theoretical framework in Commission 27/03/2017, Case M.7932 *Dow/DuPont* Annex 5.

B. Conceptualizing Common Ownership in Unilateral Effects Analysis

At the outset, it is expedient to pay heed to the difference between so-called cross shareholdings and common ownership. We use the notion of cross shareholding to describe a situation where rivals hold stakes in each other. The analysis of unilateral effects resulting from cross shareholdings, even if they do not amount to control, is that of an internalization of external effects of a post-merger price increase.²¹ There, the standard UPP²²-analysis and GUPPI²³-analysis can be applied. When it comes to the effects of common ownership, however, things are slightly, albeit not fundamentally, different. The reward for a price increase is indirectly provided in that it benefits the shareholder by increasing the returns it derives from the firm's competitors. However, it is being assumed that portfolio companies will react to their common owners' interests in rivalling portfolio companies. Therefore, the economic hypothesis behind the alleged harmfulness of common ownership is that of an indirect internalization of external effects of price increases on their common shareholders. A horizontal merger between portfolio companies therefore basically raises two questions with respect to possible impacts of common ownership on the counterfactual analysis: To what extent has an internalisation of pricing externalities existed before the merger due to common ownership, and whether and to what extent does a horizontal merger increase the degree of this internalisation of pricing externalities?

Any horizontal merger, by definition, leads – to some extent – to an internalization of external price effects.²⁴ The closer the competition, the greater this effect. With the competitive harm purported to arise from common ownership, however, a merger between rivals, in which common shareholdings exist, it is different. Depending on how investors have spread their holdings on the market, a merger on that market directly affects the structure of such common ownership and thereby firms' incentives to set prices. The mere fact that before or after the merger common shareholdings exist, therefore, is in itself insufficient to argue that this makes competitive harm more likely or serious. In fact, we show that, depending on the facts of the case, the opposite can be true, even to the extent that a horizontal merger can, at least theoretically, lead to a downward pricing pressure, if compared to the pre-merger scenario, due to the effects precipitated by the existence of common ownership.

In order to account for the impact that common ownership can have on pricing incentives following from a merger, it is therefore inevitable to integrate it into the analysis of upward pricing pressures, to the extent that there is convincing evidence that common ownership affects firms' incentives in the respective case. That is, if the channels through which common ownership can have an effect on firms' strategies have been properly established, and if the extent and the change in common ownership that arises from a merger is reflected in the final assessment, it is necessary to also integrate common ownership in the substantive merger analysis. In contrast to what the Commission might have insinuated in *Dow/DuPont* and *Bayer/Monsanto*, the mere finding of common ownership in the affected market therefore cannot serve as a circumstantial factor for merger assessment without evaluation of the actual price effects (on that at II.C.).

²¹ See on that *Nadav Levy, Yossi Spiegel & David Gilo*, Partial Vertical Integration, Ownership Structure, and Foreclosure, 10 *American Economic Journal: Microeconomics* 132-180 (2018); *Ariel Ezrachi & David Gilo*, *EC Competition Law and the Regulation of Passive Investments Among Competitors*, 26 *Oxford Journal of Legal Studies* 327-349 (2006).

²² Upward Pricing Pressure.

²³ Gross Upward Pricing Pressure Index.

²⁴ Whether and to what extent this consumer harm is offset by a downward pricing pressure based on efficiencies is another matter, which must also be accounted for. It is not the purpose of this article, however, to outline the principles of merger effects analysis. The UPP-Test, for example, makes default assumptions on efficiencies, like a 10% decrease in marginal cost.

C. Common Ownership and Price Effects

(1) Choice of an appropriate metric

Based on the preceding discussion, the aim of this section is as follows. We start with the *in arguendo* assumption that common ownership, as defined and discussed in the preceding sections, has an impact on firms' strategic behaviour. As we noted, however, such a conclusion is far from obvious as there are many reasons for why this may not be the case, and as the existing literature has, in our view, not yet convincingly identified the precise channels of such effect.²⁵ Still, based on this assumption, we analyse how the presence of common ownership can shape the price effects resulting from a merger.

Some recent contributions have focused on the use of the modified HHI²⁶ (M-HHI) as a way to integrate common ownership into a single concentration measure.²⁷ As is well known, the use of such single concentration measures and of thresholds based on these can be criticized in general since the informational value provided by concentration measures is often insufficient to draw conclusions on specific merger effects. Still, at least with respect to the HHI there seems to be some consensus that it is at least useful as a first screen to define safe havens or to provide additional information on the general level of competition on a market.²⁸ Such a consensus on the indicative force of the concentration index with respect to the propensity of competitive harm, however, does not exist with respect to the M-HHI. Moreover, recent contributions have pointed out serious flaws in this concept, as we briefly review below. A key issue is that the overall effect of common ownership on individual firms' price-setting incentives, pre- and post-merger, may not be robustly captured, that is across many circumstances, by such a single metric.

Compared to the use of such concentration measures, the derivation of the upward pricing pressure (or of other "pricing pressure indices") in merger analysis focuses more directly on individual firms' pricing incentives and how these are shaped by the post-merger internalization of former rivals' profits. The calculation of the aforementioned UPP and GUPPI has become a common approach to provide additional information on the potential price effect of a merger. In fact, the contributions that introduced the M-HHI to the analysis of common ownership have also provided an extension of the UPP to integrate common ownership. Indeed, once the way in which common ownership affects a firms' pricing incentives has been pinned down, such an extension is straightforward. In the Appendix (below at IV.) we replicate such a specific formal extension of the pricing pressure indices. In this article, however, we choose not to rely explicitly on the modified UPP (M-UPP) or the M-GUPPI. Instead, the subsequent discussion gravitates solely towards the questions to what extent any given firm internalizes rivals' profits before and after the merger, which we refer to as "incremental internalization", and how this difference is shaped by the presence of common ownership. One reason for this approach is that it allows

²⁵ For more on that see *infra* II.E..

²⁶ Herfindahl-Hirschman Index.

²⁷ The literature follows Daniel P. O'Brien & Steven C. Salop, *Competitive effects of partial ownership: Financial interest and corporate control*, 67 *Antitrust L.J.* 559 (2000); this is again based on the earlier article Timothy Bresnahan & Steven C. Salop, *Quantifying the Competitive Effects of Production Joint Ventures*, 4 *Int. Journal of Ind. Organization* 155 (1986).

²⁸ See for example the HHI-thresholds as stipulated in the Commission's Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings, OJ 2004 C 31/5, paras. 19-23; US Horizontal Merger Guidelines 2010 para. 5.3, available at <https://www.justice.gov/atr/horizontal-merger-guidelines-08192010> (last accessed 26/06/2019).

to (formally) illustrate the main ideas in a simpler, notationally much less tedious way, so that all derivations can be made fully transparent. Besides, there are, however, also more substantive reasons for why in this article we find it somewhat premature to apply any given pricing pressure index. We now briefly discuss why we hesitate to do so, before moving on to our substantive analysis.

We first need to recall that the standard application of UPP and GUPPI essentially only considers “marginal” adjustments and therefore focuses only on partial price-increasing incentives. Notably, when the post-merger incentives of some firm 1 to raise prices are considered, the prices of all other firms, including that of the merged firm 2, are held constant. From a practical perspective, this allows to gauge price effects based on pre-merger data. Now with common ownership, such “second round” price effects may however be more pervasive and also harder to gauge without a full equilibrium analysis. In fact, the change of the ownership structure following the merger may directly affect the objective function even of an outsider to the merger, which however shares at least one (common) owner with one of the parties to the merger. Consequently, the incentives of any given firm, which is party to the merger, will now, under common ownership, potentially incorporate also the margins and profits of such an outsider.²⁹ Overall, the *ceteris paribus* assumption of the UPP or GUPPI calculations may therefore seem less robust when common ownership is pervasive.

Moreover, one rationale for ignoring such “second round” adjustments in the standard case without common ownership may no longer apply, namely that for an overall assessment one can indeed ignore such a full equilibrium analysis when already the “first round” analysis leads to a (net) upward pricing pressure. Taking again the price of an outsider, even though we are not yet equipped with the formal tools (cf. below), it is easy to see that following a merger in the context of common ownership the firm’s changed incentives can instead lead to a price reduction. This is, for instance, the case when owners of the outsider hold a substantial pre-merger stake in one of the parties to the merger, which in the course of the merger is much diluted, potentially as these owners were bought out.³⁰ Presently, we cannot conclude whether such considerations generally call for a fuller equilibrium analysis instead of a *ceteris paribus* analysis as conducted for the UPP or GUPPI. Rather than relying on an extension of a metric such as the UPP or GUPPI to common ownership we therefore confine ourselves to illustrating how common ownership may affect, in a possibly non-anticipated way, the *incremental internalization* of former rivals’ profits when comparing a firm’s pre- and post-merger pricing incentives. A final, additional benefit of this simplified approach is that we can subsequently apply our results directly also to the analysis of innovation incentives.

(2) A formalization of how common ownership affects firms’ pricing incentives

In what follows, we first introduce some notation. This allows us to make the subsequent discussion more precise. Still, we will restrict such formalization as far as possible, and no prior knowledge of even the basic economic tools is necessary to follow the discussion.

We consider, as in our preceding illustration, two firms that intend to merge, to whom we refer to as firms 1 and 2. We also restrict attention to only two owners, A and B. We only consider equity stakes and suppose that

²⁹ As to the aspect of internalisation of pricing externalities under common ownership, *see supra* II.B.

³⁰ Even when these owners keep their financial interest, it will be diluted in a given pre-merger firm. If the respective product is a closer substitute to the outsider’s product than the product of the other merger party, then after the merger the objective of the outsider may place less overall weight on rival profits.

these fully describe the financial interests of each owner. More generally, we refer to the respective financial interests of a party's cash-flow rights and denote these by the general variable β_{ij} , so that β_{A1} captures the share of profits of firm 1 going to owner A. Denoting firm profits by π_1 and π_2 , that is with a subscript for the identity of the respective firm, and those of owners by π^A and π^B , that is with a superscript for the respective owner, we can write the profits of owner A as $\pi^A = \beta_{A1}\pi_1 + \beta_{A2}\pi_2$. These represent simply the sum of the profits from firm 1 and firm 2 that accrue to A. The profits of B are likewise $\pi^B = \beta_{B1}\pi_1 + \beta_{B2}\pi_2$.

Neither A nor B control³¹ the decisions of the two firms 1 and 2. Admittedly, as there are only two owners in the example, one has at least 50 % of shares. The subsequent arguments apply, however, also when we introduce more owners, thereby diluting each owner's share far below 50 %, albeit all formal expressions become rather tedious with more owners. Now, the strategic variables are not decided directly by owners but by management. Therefore, to derive the respective equilibrium choices we need to set up management's objective function.

Generally, there may be various ways to do so, and there is extensive literature in economics and finance on the so-called agency conflicts between owners and management. We abstract from this and, for now, simply stipulate the following relationship between owners and management: Management places on each owner's profits some weight γ_{ij} , so that, for instance, γ_{A1} is the weight placed by management of firm 1 on the profits of owner A. We first treat these weights as a given, additional input for the analysis.

We denote the objective function of the management of firm 1 by Π_1 , which comprises, with the respective weights, the profits of its owners: $\Pi_1 = \gamma_{A1}\pi^A + \gamma_{B1}\pi^B$. We use a capital letter to transparently indicate that this is the objective function of the firm's management, while π_1 denotes firm profits. After substituting for the respective profits of both owners, π^A and π^B , we obtain with a simple transformation

$$\Pi_1 = \gamma_{A1}(\beta_{A1}\pi_1 + \beta_{A2}\pi_2) + \gamma_{B1}(\beta_{B1}\pi_1 + \beta_{B2}\pi_2),$$

and then collecting terms for π_1 and π_2

$$\Pi_1 = \pi_1(\gamma_{A1}\beta_{A1} + \gamma_{B1}\beta_{B1}) + \pi_2(\gamma_{A1}\beta_{A2} + \gamma_{B1}\beta_{B2}).$$

Note that when firm 1 had only one owner, A, on which management places the full weight, then this would simplify to $\Pi_1 = \pi_1 + \pi_2\beta_{A2}$, thus representing simply the profits of owner A. When owner A has, in addition, only a stake in firm 1, but not in firm 2, this further simplifies to $\Pi_1 = \pi_1$. When there is, however, common ownership, the management of firm 1 takes into consideration both profits of firm 1 and firm 2.

For a comparison of how a merger affects the pricing incentives of firm 1, it is now useful to further rewrite the respective (pre-merger) objective function as follows:

$$\Pi_1 = (\gamma_{A1}\beta_{A1} + \gamma_{B1}\beta_{B1}) \left[\pi_1 + \pi_2 \frac{\gamma_{A1}\beta_{A2} + \gamma_{B1}\beta_{B2}}{\gamma_{A1}\beta_{A1} + \gamma_{B1}\beta_{B1}} \right],$$

where we have only taken a fixed factor "outside" the rectangular bracket. This simple transformation basically normalizes the weight that the management puts on own firm profits, π_1 , to one. The remaining factor with which π_2 is multiplied thus represents the pre-merger internalization of the rival firm's profits (relative to

³¹ As to the notion of control in terms of Article 3 *see supra* I. It should be noted, however, that the literature on common ownership often refers to the alleged incentives of the portfolio companies to cater to the interests of the common owners as a type of "control" of the latter over the former.

own-firm profits) under common ownership. We isolate this term and denote this pre-merger internalization factor (from the perspective of firm 1), as a weight put on firm 2:

$$w_{1,2} = \frac{\gamma_{A1}\beta_{A2} + \gamma_{B1}\beta_{B2}}{\gamma_{A1}\beta_{A1} + \gamma_{B1}\beta_{B1}}.$$

It is clearly equal to zero when both owners of firm 1 do not have a stake in the rival, i.e., when $\beta_{A2} = \beta_{B2} = 0$.

Recall now that we assume that owners *A* and *B* have no other shareholdings and that both firms 1 and 2 have no other shareholders. Consequently, after a merger the objective function of the integrated firm is simply to maximize joint total profits $\pi_1 + \pi_2$. From the perspective of choosing the strategies of firm 1, e.g., the prices of the respective products, post-merger the internalization factor is clearly equal to one. In what follows, our analysis focuses entirely on how common ownership affects the *difference* between the post-merger internalization factor, which is one, and the pre-merger internalization factor, which for firm 1 is given by $w_{1,2}$. Without common ownership, this difference is exactly one.

(3) How common ownership mitigates a merger's price effect (and may even lead to a "downward pricing pressure" of a merger)

We first have the following immediate observation. When there is common ownership and when this affects management's (pre-merger) incentives, $w_{1,2}$ is strictly positive, so that the difference to the post-merger full internalization factor of one is strictly smaller than one. This reflects a very simple intuition. With pre-merger common ownership, the management of firm 1 already internalizes the effects of its strategy choices on the rival 2 before the merger, implying, at least under the given circumstances, that the incremental internalization effect from the merger is strictly smaller in the presence of common ownership. *Ceteris paribus*, again under the considered circumstances, the upward pricing pressure from the merger should then be mitigated by the presence of common ownership.

As it turns out, under specific circumstances and pre-merger common ownership the merger can even have the somewhat perverse effect of *reducing* the internalization factor so that, *ceteris paribus*, the merger would have a tendency to exert a *downward* and not an upward pricing pressure on the respective firm. Based on the preceding observations, this is the case when the pre-merger internalization factor for firm 1, $w_{1,2}$, already exceeds one. In this case, before the merger the management of firm 1 would actually place *more* weight on the rival's profits than on that of firm 1. While such an outcome may seem unrealistic, notably as this could amount to a breach of the fiduciary duty of firm 1's management, we still conduct the respective analysis. If nothing else, it shows at least that one should be extremely careful when formalizing the notion of how common ownership affects pricing incentives.

Using thus the condition that $w_{1,1} > 0$ and substituting for $w_{1,2}$, such a seemingly perverse, price reducing effect of a merger would thus arise when³²

32 Precisely, this follows from $w_{1,2} = \frac{\gamma_{A1}\beta_{A2} + \gamma_{B1}\beta_{B2}}{\gamma_{A1}\beta_{A1} + \gamma_{B1}\beta_{B1}} > 1$ after multiplying with the denominator, which yields $\gamma_{A1}\beta_{A2} + \gamma_{B1}\beta_{B2} > \gamma_{A1}\beta_{A1} + \gamma_{B1}\beta_{B1}$, and then collecting the respective terms.

$$\gamma_{A1}(\beta_{A2} - \beta_{A1}) > \gamma_{B1}(\beta_{B1} - \beta_{B2}).$$

We now discuss this condition in some detail. Note that when only A and B are the owners of both firms, then we can clearly express all cash-flow shares only through those of owner A, such that in particular $\beta_{B1} = 1 - \beta_{A1}$ and $\beta_{B2} = 1 - \beta_{A2}$, from which the preceding condition becomes³³

$$\gamma_{A1}(\beta_{A2} - \beta_{A1}) > \gamma_{B1}(\beta_{A2} - \beta_{A1}).$$

We suppose now that the management of firm 1 places more weight on owner A than on owner B. In the subsequently introduced special case of so-called proportional control this holds whenever A has higher cash-flow rights than B. With $\gamma_{A1} > \gamma_{B1}$, whether the condition holds depends thus only on the sign of $\beta_{A2} - \beta_{A1}$. The condition holds if $\beta_{A2} > \beta_{A1}$, so that A has higher interests in firm 2 than in firm 1, and it does not hold if the converse is the case (with $\beta_{A2} < \beta_{A1}$). We can now sum up as follows. The merger has the discussed perverse effect of exercising a “downward pricing pressure” on firm 1 when two conditions are jointly satisfied before the merger: The management of firm 1 cares more about the profits of some owner A who, at the same time, has a higher financial interest in the rival firm than in firm 1. The effect of the considered merger is then to set this perverse imbalance in the assumed incentives of firm 1’s management “right”.³⁴

In the Appendix we show further that under a commonly chosen specification of the respective weights γ_{ij} , owner A may need to hold only a tiny stake in firm 1 to ensure that the management excessively biases the firm’s decision in its interest, so that the perverse effect then depends only on whether A has a higher stake in rival 2 than in firm 1. For this analysis we apply the commonly used specification of so-called “proportional control”, where $\gamma_{ij} = \beta_{ij}$. That is, the control rights, which determine the weight placed on some owner i by the manager of firm j , correspond with the cash-flow rights. When, under this specification, we now consider B as a group of dispersed shareholders, as this group becomes more and more dispersed, under “proportional control” the management effectively only maximizes the interests of the remaining non-atomistic owner, A, even when A has only a tiny stake. Then the discussed perverse “downward pricing pressure” indeed arises always when A has a bigger stake in the rival firm 2 than in the considered firm 1.

Two insights thus arise from the preceding discussion. First and more substantively, pre-merger common ownership may in fact mitigate the price effect resulting from a merger. If the efficiency gains from a merger are independent of pre-merger common ownership, then common ownership could lead to a greater propensity of the merger to create an overall negative UPP (that is, including such efficiency gains). In fact, we isolated circumstances where such a “downward pricing pressure” was feasible even without efficiency gains, at least for one of the considered firms. A second, less substantive, insight is the following. We also showed that a common formalization of how common ownership affects management’s incentives may lead to extreme and potentially highly implausible results. This reemphasizes the point made above that a possible integration of common

³³ Precisely, the only change is on the right-hand side, where $\beta_{B1} - \beta_{B2} = (1 - \beta_{A1}) - (1 - \beta_{A2}) = \beta_{A2} - \beta_{A1}$.

³⁴ With the considered formalization of the effects of common ownership, such a downward pricing pressure of a merger, even absent efficiencies, can also be generated with different constellations and is thus far from exceptional, at least in theory. To see this, consider more informally an extension of the common ownership structure to firm 3. Suppose that some owner A has pre-merger a considerable stake in both firm 1 and firm 3, but that after the merger this owner’s interest becomes much diluted. In this case, the merged firm may thus no longer internalize profits of the outside rival 3, while the management of firm 1 previously did so. If firm 3 (respectively, its product) is a particularly close substitute to firm 1, rather than the merged firm 2, then this effect of now a much diluted internalization may prove to be substantial. This example provides the counterpart of the “widening of common ownership” case that we discuss below, where it is only through the merger and its interaction with pre-merger common ownership of firm 2 that firm 1 partially internalizes an outsider’s profits. Instead, in the presently discussed case, the merger does not widen the nexus of common ownership, but reduces it.

ownership in a formal analysis, including that of UPP or GUPPI, needs to be done with great care - and should be combined with an analysis of the plausibility and robustness of the respective implications.

(4) How common ownership can reinforce a merger's price effect

It would, however, be wrong to conclude that pre-merger common ownership will always mitigate the price effects of a merger. In fact, a major restriction of the preceding analysis was to consider only common ownership stakes relating to the two parties of the considered merger. Once we introduce, instead, ownership stakes in other firms, common ownership may well reinforce the upward pricing pressure that generally results from the internalization effects of a merger. We next provide an illustration of this.

We restrict our consideration to three firms 1, 2, 3 and we still consider a merger of firms 1 and 2. To make matters simple, focusing again on the pricing incentives of firm 1 we now suppose that before the merger firm 1 has a single owner, A, and that A also has no stake in any other firms in the considered industry. We further suppose that also firm 2 has a single owner, B, but that this owner also has a stake in firm 3, which, as previously, we denote by β_{B3} .

With this specification, the pre-merger objective function of firm 1's management is obviously to maximize π_1 , the profits of firm 1 (which are also the total profits of its sole owner A). Turning to the post-merger situation, we must now pin down the ownership shares of A and B, given that only one of the subsequent joint owners, B, has a stake in another firm in the industry, 3. More precisely, we must know both the post-merger shares of the merged firm's cash flows, which we denote for both owners by $\beta_{A(12)}$ and $\beta_{B(12)}$, and the respective weights that the management of the merged firm puts on these two owners, which we denote by $\gamma_{A(12)}$ and $\gamma_{B(12)}$ and which may be different from the cash-flow shares, unless we assume proportional control. Generally, as the post-merger profits of each owner are then $\pi^A = \beta_{A(12)}(\pi_1 + \pi_2)$ and $\pi^B = \beta_{B(12)}(\pi_1 + \pi_2) + \beta_{B3}\pi_3$, the merged firm ("12") maximizes now a more complex objective, that – crucially – also partially internalizes the profits of the stand-alone rival firm 3.³⁵ Thus, in contrast to the case where there is no common ownership, the merger's upward pricing pressure for firm 1 is now larger, because after the merger not only profits from firm 2 are fully internalized but also such internalization includes an outsider that before the merger was not connected with firm 1 through common ownership, namely firm 3. We have thus illustrated a scenario where common ownership can indeed reinforce an upward pricing pressure as it widens the post-merger internalization.

Overall, we have thus provided illustrations for both, the case where pre-merger common ownership can mitigate the upward pricing pressure arising from the merger and where it can reinforce such an upward pricing pressure. In the latter instance, common ownership extends the incremental internalization that arises from the merger as after the merger the considered firm's objective internalizes also the profits from an outsider, which is, however, linked to the firm through the web of common ownership. If such an extension of internalization does not arise, common ownership tends to mitigate the merger's price effect simply as already before the merger there may have been some internalization of rivals' profits due to the common ownership nexus. Taken together, these results highlight the need for a proper assessment of how common ownership interacts with a merger's effect. As

35 The precise objective function is obtained from substituting $\pi^A = \beta_{A(12)}(\pi_1 + \pi_2)$ and $\pi^B = \beta_{B(12)}(\pi_1 + \pi_2) + \beta_{B3}\pi_3$ into $\Pi_1 = \gamma_{A(12)}\pi^A + \gamma_{B(12)}\pi^B$, which yields $\Pi_{12} = \gamma_{A(12)}\beta_{A(12)}(\pi_1 + \pi_2) + \gamma_{B(12)}(\beta_{B(12)}(\pi_1 + \pi_2) + \beta_{B3}\pi_3)$. This can be rewritten as $\Pi_{12} = (\gamma_{A(12)}\beta_{A(12)} + \gamma_{B(12)}\beta_{B(12)}) \left[(\pi_1 + \pi_2) + \frac{\gamma_{B(12)}\beta_{B3}}{\gamma_{A(12)}\beta_{A(12)} + \gamma_{B(12)}\beta_{B(12)}} \pi_3 \right]$.

we focused simply on the extent of the incremental internalization of rivals' profits, which arises from the merger, our analysis is not tied to a particular metric, such as the M-UPP or M-GUPPI. We have outlined above why the choice of such metric would need careful consideration.

(5) Addendum: Why M-HHI may not provide an adequate concentration measure

The subsequent analysis does not intend to provide a complete discussion of the M-HHI, that is, the extension of the HHI to common ownership. It also does not intend to provide an account of the empirical literature that has used this metric to establish a relationship between common ownership and prices – and also not of the literature that seriously criticizes these findings.³⁶ Instead, we confine our focus on one issue.

The use of the HHI has a formal underpinning in the game theoretic analysis of oligopolistic (quantity) competition. In fact, under specific assumptions it can even be shown that this metric provides sufficient information to determine the equilibrium price and consumer welfare. Obviously, apart from such specific circumstances, the potentially different equilibrium prices of market participants, and with it consumer welfare, may not be captured and described solely with a single metric such as the HHI.³⁷ Such a metric may however still prove useful when, under a large set of circumstances, it has a monotonic relationship with prices and consumer surplus, in particular if, for the purpose of merger analysis, we consider only changes in HHI that follow such mergers. As the preceding analysis shows, the effect of common ownership on firm incentives is complex, even under simplifying assumptions on management objectives. It is thus even less likely that a single metric such as the M-HHI adequately captures such incentives and thereby equilibrium prices. In fact, as recent contributions to the literature show, there is a disconnect between the M-HHI and equilibrium prices. Precisely, changes in (common) ownership that raise the M-HHI may lead to lower equilibrium prices and vice versa.³⁸ It seems thus premature to rely on the M-HHI to gauge the effects of common ownership on prices and, in particular, to rely on it for the assessment of the interaction of common ownership and price effects from a merger.

D. Common Ownership and Innovation Competition

The Commission in *Dow/DuPont* has posited that the alleged harmfulness of common ownership in a horizontal merger context is not confined to price effects.³⁹ The underlying theoretical framework is supposed to be transferable to the analysis of innovation competition. The Commission therefore reaches the conclusion that, due to the existing common ownership in the business sector, the horizontal merger between *Dow* and *DuPont* raised additional competitive concerns. It eschews, however, to provide a theoretical framework for its effects analysis or empirical evidence.⁴⁰

Using the preceding (formal) analysis, we can now put this conclusion under scrutiny. Again, we do not venture to assess the validity of the Commission's allegations in the mentioned case. Rather we strive to analyze

³⁶ We refer the reader to O'Brien & Waehrer, *supra* note 16, and O'Brien, *supra* note 16.

³⁷ An exception is the case of quantity competition in homogeneous products.

³⁸ O'Brien & Waehrer, *supra* note 16 at 744, provide examples and ultimately the following conclusion: "Therefore, the MHII does not provide a reliable prediction of the effects of common ownership on price".

³⁹ Commission 27/03/2017, Case M.7932 *Dow/DuPont* Annex 5 para. 58.

⁴⁰ The somewhat discretionary handling of the substantive issues associated with common ownership surfaces in the later *Bayer/Monsanto* decision. There, the Commission found *BASF* to be a suitable purchaser for divestiture commitments, despite common shareholdings existing among the merged entity and *BASF*, see Commission 21/03/2018, Case M.8084 *Bayer/Monsanto* para. 3303. Along the lines of the *Dow/DuPont* reasoning, however, the Commission could have been expected to at least submit reasons for why a divestiture to *BASF* would not give rise to similar concerns over innovation competition as voiced in *Dow/DuPont*.

whether the impact of common ownership on innovation competition can be assumed without more or whether it calls for a case by case analysis. Recall that the analysis has focused on a comparison of the pre-merger and post-merger *internalization* of rivals' profits. Such a consideration is clearly not restricted to price choices alone, but extends to any other strategic variable, including the choice of innovation. We showed that how the presence of common ownership affects the incremental internalization of a merger depends on the specific circumstances – and also on the particular formalization that seeks to capture how the objective function of management comprises the profits of different owners and thereby also their financial claims from joint ownership. One of our conclusions was that common ownership may lead to pre-merger internalization of rivals' profits, which is why the *incremental* internalization effect from a merger may be smaller than without common ownership. This may then lead to a smaller upward pricing pressure (if there is one at all; cf. the analyzed asymmetric ownership cases). This argument immediately extends to concerns that post merger firms may reduce innovation activities as they lose their “business stealing” incentives. Such a dampening effect on innovation may again be lower under common ownership, given that the negative effect of such business stealing may already have been partially internalized before.

We also argued that common ownership can however increase the incremental internalization effects of a merger, notably when the merger extends such internalization beyond the involved parties, as some owners have stakes also in other rivals. We referred to this case as a widening of the internalization effect, which arises from the combination of the merger with pre-merger common ownership. If such an internalization of a business stealing effect from innovation increases when the merger takes place under common ownership, the negative impact of a merger on innovation may indeed be higher under common ownership. Taken together, once again the analysis of how common ownership bears on the effect of a merger on innovation needs a proper assessment, provided that one presumes that common ownership is of relevance at all in a specific case. In particular, it does not seem to be justified to merely assume that the presence of common ownership reinforces anticompetitive effects on innovation.

Even if it were to be assumed that common ownership had a negative effect on innovation competition, which may not be the case, it could not be concluded that this also aggravates any anticompetitive effect from a merger between commonly owned innovators. This article is not about the effects of common ownership in isolation, but rather on how common ownership interacts with a merger. We thus do not discuss at greater length the first issue. Depending on the nature of innovation and incentives, the effects may however be already less than clear-cut at this level. For instance, innovation may have a positive spillover on all other firms in the industry, rather than primarily a business stealing effect.⁴¹ Then, the incentives for innovation may be higher under common ownership, as management takes into consideration the positive externality of innovation on rivals.⁴² While in a competitive environment, innovating firms can be deterred from investing in R&D, where they anticipate that the

⁴¹ On that see Giulio Federico, *Horizontal Mergers, Innovation and the Competitive Process*, 8 Journal of European Competition Law & Practice, 668, 675 (2017); Bruno Jullien & Yassine Lefouili, *Horizontal Mergers and Innovation*, 14 Journal of Competition Law & Economics, 364, 384 (2018). Giulio Federico, Gregor Langus & Tommaso M. Valletti, *Horizontal Mergers and Product Innovation*, (February 26, 2018), available at SSRN: <https://ssrn.com/abstract=2999178> or <http://dx.doi.org/10.2139/ssrn.2999178> (last accessed 26/06/2019), at 12. For a general analysis on how common ownership may affect innovation incentives see recently Miguel Anton, Florian Ederer, Mireia Gine & Martin Schmalz, *Innovation: The Bright Side of Common Ownership?* (June 2018), available at SSRN: <https://ssrn.com/abstract=3099578> (last accessed 15/07/2019).

⁴² In this case, there would thus also be merger-specific efficiencies. When these are already partially exploited under common ownership and when the incremental internalization of the merger is lower with such pre-merger common ownership, the presence of common ownership may thus reduce such merger-specific efficiencies. Instead, when the merger leads to the discussed widening of internalization in the presence of common ownership, common ownership can again increase such efficiency gains.

results will be exploited by their rivals, the negative effect of such an exploitation is possibly mitigated if firms serve the economic interest of identical common shareholders. Another source for efficiencies is associated with the facilitation of efficient R&D coordination (for example the set-up of R&D-joint ventures) between competing firms when common shareholders exist versus a scenario in which common shareholding is absent. Furthermore, the breakup of patent-holdups can be an efficiency precipitated by the existence or creation of common shareholdings.

E. On the Evidentiary Standards

In the following section, we want to map our conclusions onto the legal determinants governing the evidentiary standards of merger assessment. At the outset, it must be recognized that the Commission carries the burden of proof for the anticompetitive effects of a merger.⁴³ Apart from the efficiency-side of the transaction⁴⁴, the Commission must adduce sufficient evidence for its theory of harm. This obligation is enshrined in Article 337 TFEU⁴⁵, which stipulates that it is upon the authority to investigate the facts of a case.⁴⁶ It complements the Commission's obligation under Article 296 (2) TFEU to provide reasoned arguments for its decision in order to enable the Courts to review it⁴⁷, which is of particular importance when enforcing the EU antitrust laws.⁴⁸ These emanations of the obligation to investigate a case are further supplanted by the duty of care.⁴⁹ The latter retains the authority to examine carefully and impartially all relevant aspects of an individual case.⁵⁰ It is rooted in the right to good administration (Article 41 Charter of Fundamental Rights of the European Union),⁵¹ and is recognized in legal scholarship.⁵²

When it comes to relying on common ownership as an element of a theory of harm, it is therefore upon the authority to adduce evidence that support its allegations. That is where the intricacies of the underlying theoretical framework of common ownership bulk up. In the light of the difficulties of substantiating minority influence, the Commission in *Dow/DuPont*⁵³ and in *Bayer/Monsanto*⁵⁴ has eventually dispensed itself with a case specific assessment of such influence. The Commission therefore refrained from calculating M-HHI in both

⁴³ On the allocation of the burden of proof, see Stefan Thomas, *The Known Unknown: In Search for a Legal Structure of the Significance Criterion of the SIEC Test*, 13 Journal of Competition Law & Economics 346-387 (2017).

⁴⁴ We have left open the question whether and to what extent the burden of proof for efficiencies is split between the Commission and the parties. For a further analysis see Stefan Thomas, *supra* note 43.

⁴⁵ "The Commission may, within the limits and under conditions laid down by the Council acting by a simple majority in accordance with the provisions of the Treaties, collect any information and carry out any checks required for the performance of the tasks entrusted to it."

⁴⁶ See Thomas von Danwitz, *Europäisches Verwaltungsrecht* 417 (2008).

⁴⁷ See CFI 25/06/1998, Cases T-371/94 and T-394/94, ECLI:EU:T:1998:140 *British Airways et al.* para. 95.

⁴⁸ See von Danwitz, *supra* note 46 at 419.

⁴⁹ ECJ 17/11/1987, Case 142 and 156/84, ECLI:EU:C:1987:490 *BAT Reynolds* para. 20; ECJ 21/11/1991, Case C-269/90, ECLI:EU:C:1991:438 *Hauptzollamt München Mitte* para. 14; CFI 18/09/1992, Case T-24/90, ECLI:EU:T:1992:97 *Automec* para. 79; CFI 19/03/1997, Case T-73/95, ECLI:EU:T:1997:39 *Oliveira* para. 32; CFI 09/07/1999, Case T-231/97, ECLI:EU:T:1999:146 *New Europe Consulting and Michael P. Brown* paras. 39 and 41; ECJ 17/05/2001, Case C-449/98, ECLI:EU:C:2001:275 *IECC* para. 45; CFI 30/01/2002, Case T-54/99, ECLI:EU:T:2002:20 *max.mobil* para. 49; CFI 04/03/2003, Case T-319/99, ECLI:EU:T:2003:50 *FENIN* para. 42.

⁵⁰ See Paul Craig, *EU Administrative Law* 363 (3rd ed. 2018); Hans P. Nehl, *Principles of Administrative Procedure in EC Law* 107 (1999).

⁵¹ Herwig C.H. Hofmann, *Inquisitorial Procedures and General Principles of Law: The Duty of Care in the Case Law of the European Court of Justice*, in: *The Nature of Inquisitorial Processes in Administrative Regimes: Global Perspectives* 110 (Laverne Jacobs & Sasha Baglay eds., 2013); Herwig C.H. Hofmann, Gerard C. Rowe & Alexander H. Türk, *Administrative Law and Policy of the European Union* 446 (2011).

⁵² Craig, *supra* note 50, at 362 et seqq.; Nehl, *supra* note 50, at 103 et seqq.; Hofmann, *supra* note 51, at 110 et seqq.; Hofmann, Rowe & Türk, *supra* note 51, at 446 et seqq.; Sabino Cassese, *European Administrative Proceedings*, 68 LCP 21, 25 (2004); Claudio Franchini, *European Principles Governing National Administrative Proceedings*, 68 LCP 183, 189 et seq. (2004).

⁵³ Commission 27/03/2017, Case M.7932 *Dow/DuPont* Annex 5 para. 79.

⁵⁴ Commission 21/03/2018, Case M.8084 *Bayer/Monsanto* para. 228 footnote 113.

decisions. Nevertheless, the Commission invoked common shareholdings in the industry “as an element of context in the appreciation of any significant impediment to effective competition.”⁵⁵ The problem with this view is that a case-specific assessment of common owners’ influence is not only a prerequisite for the calculation of the M-HHI, it is equally conditional for making any assumptions on possible effects of common ownership in the first place, as the analysis has shown.⁵⁶ When it comes to horizontal mergers between portfolio companies, common ownership should therefore only constitute an element of context, if it is clear which effects this context might have on the results of a counterfactual analysis.

A lack of evidence cannot be bypassed by presumptions to the detriment of the parties. To some degree, parties can be retained to support the authority in its investigations by providing necessary information which is in their possession.⁵⁷ Yet this does not exonerate the authority from its duty to autonomously gather information from other sources, as the ECJ has made clear in *Grundig/Consten*.⁵⁸ More importantly, if the parties fulfil their duties to cooperate with the Commission, the burden of persuasion still rests on the authority. This means that where doubts remain, the authority cannot invoke a presumption. The ECJ has stated in *Chiquita* that “(h)owever unreliable the particulars supplied by [the party] may be ..., the fact remains that it is for the Commission to prove” that the requirements of the antitrust laws are fulfilled.⁵⁹

In the light of these stipulations, the antitrust authority should be retained to demonstrate that, based on the available data, the assumption of minority influence is corroborated. In *Dow/DuPont*, the Commission has referenced several messages made by the management staff of investors, in which these persons had purported to possess influence on the portfolio companies.⁶⁰ It should be required, however, when relying on internal documents to demonstrate that such persons have actually had such influence and that they did not merely pretend to have it. Also, it should be substantiated in which way these persons intended to use their alleged influence, i.e. if they wanted to induce their portfolio companies to rise prices or cut back research & development.

In the absence of direct evidence, it is questionable whether minority influence by common owners can be assumed per se. A *prima facie* evidence would require that, upon initial examination of the case, sufficient corroborating evidence appeared to exist in support of the allegation. The mere existence of common ownership, however, is inapt to supplant such assumption. While several theoretical explanations for common shareholder influence have been conjured,⁶¹ the idea of common shareholder influence is still exposed to several objections.⁶²

⁵⁵ Commission 21/03/2018, Case M.8084 *Bayer/Monsanto* para. 228; Commission 27/03/2017, Case M.7932 *Dow/DuPont* Annex 5 para. 81.

⁵⁶ See *supra* II.C.(2).

⁵⁷ Commission 02/04/2003, Case M.2876 *Newscorp/Telepiu'* para. 217; see also von Danwitz, *supra* note 46 at 420 et seq.

⁵⁸ ECJ 13/07/1966, Case 56 and 58/64, ECLI:EU:C:1966:41 *Consten and Grundig* at 347.

⁵⁹ ECJ 14/02/1978, Case 27/76, ECLI:EU:C:1978:22 *Chiquita* para. 264.

⁶⁰ Commission 27/03/2017, Case M.7932 *Dow/DuPont* Annex 5 para. 19-27.

⁶¹ On the different strands of literature on passive investor influence in the context of antitrust analysis see Schwalbe, *supra* note 2, at 3.

⁶² On the entirety of objections, which shall only be addressed succinctly here, see O'Brien & Waehrer, *supra* note 16 at 761: “Our view is that more research is needed before conclusions can be drawn about the effects of common ownership from an analysis that imposes a control assumption (proportional control) that is not firmly grounded in theory and does not as yet have empirical support.”; see also O'Brien, *supra* note 16 paras. 10-16; C. Scott Hemphill & Marcel Kahan, *The Strategies of Anticompetitive Common Ownership* (March 2019), Yale Law Journal (forthcoming), NYU Law and Economics Research Paper No. 18-29; European Corporate Governance Institute (ECGI) - Law Working Paper No. 423/2018, available at SSRN: <https://ssrn.com/abstract=3210373> or <http://dx.doi.org/10.2139/ssrn.3210373> (last accessed 26/06/2019): “Our main conclusion is that most proposed mechanisms either lack significant empirical support or else are implausible. In particular, some widely discussed mechanisms are, in fact, not empirically tested. These non-tested mechanisms include strategies where common owners facilitate the formation of a cartel or where common owners, by being passive, fail to encourage firms to compete more aggressively. Moreover, institutional investors have only weak incentives to increase portfolio value, and therefore would not benefit from pursuing mechanisms that carry significant reputational or legal liability risks.”

Fiduciary duties and corporate governance laws restrict the management of portfolio companies in succumbing to the financial interests of common owners. The portfolio company's management remains responsible to other minority shareholders, who do not hold stakes in rivaling portfolio companies. These non-common minority shareholders will not prefer overall market profits over the individual portfolio company's profits, notably when there this would entail a trade-off. It is therefore necessary to consider that the portfolio companies' managers are legally restricted in their ability to cater to the economic interest of some common shareholders.

Also, different investment managers within the same investment firm might pursue different goals with their investments in the same portfolio company. Investment manager A might buy shares in all competitors on market Y, so that A might prefer overall market profits over individual firms' profits. Investment manager B of the same investment company, however, might use a shareholding solely in the single company 1 on market Y to hedge the risks of other investments. B will therefore not prefer overall profits in market Y over the individual profits of company 1.

Moreover, supracompetitively high prices in a downstream market X can reduce quantity and thereby purchases from input-market Y. Conversely, price increases on the input-market Y will increase costs on the downstream-market X. If an investment company has common shareholdings in both markets, it might not have any interest in using shareholder-influence to hamper competition on any of these markets.⁶³

The portfolio companies' incentives to compete can, at least to a certain extent, hinge on the compensation schemes for their managers. If incentives are linked to overall market turnouts, this might nudge the management to soften competition. Yet the existence of such compensation schemes cannot be presumed.⁶⁴ Moreover, even if such compensation schemes exist, the portfolio companies' managers might still want to demonstrate their individual performance in order to increase their personal value on the job market for board positions. Demonstration of their individual performance might induce them to engage in competition to increase the value of their companies.

Although we do not venture to prove that all conjectures made with respect to the idea of common ownership influence are conceptually flawed or empirically wrong, these succinct observations have highlighted that it would at least be unfounded to presume the opposite. We therefore conclude that any assumptions with respect to the anticompetitive effects of common ownership in horizontal merger contexts hinge on basically two limbs: the antitrust authority must demonstrate that an internalization of the common shareholders' interests actually takes place (1), and that – if such has been established – the merger alters the determinants of internalization in a way which induces unilateral harmful conduct resulting from the merger (2).

⁶³ With further analysis of possible horizontal spillover effects between markets Luca Enriques & Alessandro Romano, *Institutional Investor Voting Behaviour: A Network Theory Perspective*, University of Illinois Law Review 223, 265 (2019): "Because institutional investors cannot generally be assumed to devise their preferences over portfolio firms' competition strategies based on industry boundaries, they cannot be assumed to prefer higher prices in all markets in which their portfolio firms operate either."

⁶⁴ See also Ian R. Appel, Todd A. Gormley & Donald B. Keim, *Passive investors, not passive owners*, 121 Journal of Financial Economics 111, 129 (2016): "We find little evidence that ownership by passive funds is associated with a difference in overall managerial pay or its composition."

III. CONCLUSION

In conclusion we find that the allegations made with respect to the competitive harmfulness of common ownership cannot serve as a circumstantial factor for merger assessment without evaluation of the actual effects on price, innovation competition or other competitive parameters. Our conclusions do not depend on whether the underlying premise of minority influence is convincing or not. Even if default assumptions are being made in that regard, as we did in our economic analysis, the sheer internalization of assumed shareholders' objectives in rising prices does not necessarily add up to unilateral effects. Yet according to the legal standards governing the burden of proof in merger cases, even such default assumptions on minority influence are not feasible. Any theory of harm based on common ownership in real cases therefore requires proof of minority influence actually existing and, secondly, evidence on how the merger will alter the determinants for internalization to the worse.

IV. APPENDICES

Appendix 1: Dispersed shareholders under proportional control

Recall that we assume here so-called “proportional control”. With proportional control we can dispense of the separate notation for cash-flow rights and the weights firm management puts on individual owners, so that $\gamma_{ij} = \beta_{ij}$. This has the the following implication. Suppose for concreteness that B constitutes an independently acting group of dispersed shareholders. Precisely, we suppose that each one of such N additional shareholders holds the respective stake β_{B1}/N in firm 1 and the stake β_{B2}/N in firm 2. This must now be incorporated into the objective function of firm 1, comprising thus the profit of owner A, with respective weight β_{A1} , and the profit of each of the other owners, with respective weight β_{B1}/N . Taking all of this together, one can show the following. As N becomes large, so that the stake not held by A becomes very dispersed, with proportional control the management of firm 1 only puts weight on owner A and not of any of the other (dispersed) shareholders. That is, dispersed shareholders (and their profits) no longer enter the management’s objective function, so that ultimately the pre-merger objective of firm 1 is to maximize $\pi_1 + \frac{\beta_{A2}}{\beta_{A1}}\pi_2$.⁶⁵ This extreme result is a simple consequence of the fact that while the small shareholders’ profits enter N times into the management’s objective function, each such element decreases by the factor $1/N^2$, i.e., much faster, given that both the financial stake decreases by the factor $1/N$ and, as a consequence of the assumption of proportional control, also the respective individual weight decreases by the same factor $1/N$.

In line with the discussion in the main text, but now irrespective of all other dispersed shareholders, the merger would thus have the somewhat perverse “downward pricing pressure” precisely if the remaining non-dispersed, albeit potentially still small, owner had a larger stake in the previous rival 2 than in firm 1, i.e., if $\frac{\beta_{A2}}{\beta_{A1}} > 1$ ($\beta_{A2} > \beta_{A1}$).

Appendix 2: Derivation of the M-UPP

In what follows, we use more generally the term of a pricing pressure index (PPI). For instance, depending on whether merger-specific efficiencies are already taken into account or not, one arrives at the UPI or the GUPPI. We now replicate from the literature the derivation of the (standard) pricing pressure index. It starts from an equilibrium setting, where each firm sets its price to maximize its objective function. In the standard case, without common ownership, the objective function for each firm is its own profit function. Following a merger with a competitor, which is the comparative analysis that we undertake, the considered firm has an incentive to adjust its

⁶⁵ To show this formally note that in the considered case with dispersed shareholders the objective of the management of firm 1 is to maximize

$$\Pi_1 = \beta_{A1}(\beta_{A1}\pi_1 + \beta_{A2}\pi_2) + N \left[\frac{\beta_{B1}}{N} \left(\frac{\beta_{B1}}{N} \pi_1 + \frac{\beta_{B2}}{N} \pi_2 \right) \right].$$

A simple transformation of the last term then yields

$$\Pi_1 = \beta_{A1}(\beta_{A1}\pi_1 + \beta_{A2}\pi_2) + \frac{1}{N} \beta_{B1} [\beta_{B1}\pi_1 + \beta_{B2}\pi_2],$$

where as $1/N$ goes to zero as N becomes large (and as $\beta_{B1} = 1 - \beta_{A1}$ is kept constant), the manager’s objective function indeed converges to only the first term, $\beta_{A1}(\beta_{A1}\pi_1 + \beta_{A2}\pi_2)$. Dividing now the remaining term by β_{A1} and noting that the management’s objective is not affected by a constant multiplier, as N becomes very large the objective of firm 1’s management is indeed described by the term $\pi_1 + \frac{\beta_{A2}}{\beta_{A1}}\pi_2$.

price as it now takes into account (cannibalization) effects on the sales from the previous competitor. Holding all else constant, that is at the previous equilibrium (price) level, the PPI quantifies the incentives to marginally increase the price of a given product. By comparing these marginal incentives with any given presumed saving in marginal costs, e.g., of 10 %, the PPI can thus be used to assess whether the considered merger will raise prices or not. In this Appendix, we consider the general formulation of the modified pricing pressure index, i.e., the GUPPI, as efficiencies are not (yet) taken into account.

Consider thus a market with N firms and M (ultimate) owners. Consider now any given firm j . The management of this firm is supposed to maximize some weighted average of the profits that the owners of this firm realize with their whole portfolio. Hence, the management of firm j takes into account the profits of its owners i , denoted by π^i , according to some weight factor γ_{ij} . The objective function Π_j for firm j is thus $\Pi_j = \sum_i \gamma_{ij} \pi^i$. Profits of owners are assumed to be equal to the (cash flow) ownership shares in the firms in the considered industry, with β_{ik} being the ownership share of firm k owned by i . Denoting firm profits by π_k for some firm k (noting the use of a subscript for firms, instead of a superscript for owners), we thus have $\pi^i = \sum_k \beta_{ik} \pi_k$. Taken together, the objective function of firm j is thus

$$\Pi_j = \sum_i \gamma_{ij} \pi^i = \sum_i \gamma_{ij} \left(\sum_k \beta_{ik} \pi_k \right).$$

Firm j thus maximizes a weighted function of the profits that the respective owners derive from this firm as well as other firms in the considered industry. With this background, the next steps are then completely analogous to the derivation of the standard PPI. First, firm profits are substituted (as the product of the respective demand times the margin). Second, the optimal price for each firm is determined from the so-called first-order condition. Third, terms are slightly reshuffled, notably to allow the subsequent substitution of estimated coefficients. To accomplish this, we need some additional notation. The own-price elasticity of product j is given by e_{jj} . From this we obtain the standard mark-up factor $M_j = e_{jj}/(e_{jj} - 1)$. As is usual, marginal costs are denoted by the respective derivation of the cost function, i.e. by c_j for firm j . With this the margin of some product j , evaluated at the respective output, is given by $m_j = P_j - c_j$. Next, the diversion ratio δ_{kj} captures the diverted demand from product j to some product k following a marginal price increase for product j . With this notation at hands, profit maximization for firm j gives rise to the following condition for the respective price j :

$$P_j = M_j \left[c_j + \sum_{k \neq j} \frac{\sum_i \gamma_{ij} \beta_{ik}}{\sum_i \gamma_{ij} \beta_{ij}} \delta_{kj} m_k \right].$$

If there is no common ownership, this reduces to $P_j = M_j c_j$, the standard mark-up formula. Common ownership adds an always positive mark-up, arising from the second term in rectangular brackets. This term captures the extent to which firm j internalizes the profits (respectively margins) of other firms k .

The key difference to the more simple representation in the main text, in terms only of the internalization factor, is thus that the derived PPI formula incorporates the degree of substitution (via the diversion ratios) and the respective margins. This allows to quantify the pricing pressure, rather than providing only indicative assessments, as done in the main text. Such indicative assessment were however already sufficient to point out how a merger's effect can be both mitigated and exacerbated by common ownership in the industry.