# Interlocking Directorates in Europe

# An Enforcement Gap?

#### Florence Thépot

#### 10.1 INTRODUCTION

Interlocking directorates refer to situations in which one or more companies have one or more members of their boards in common. In the US, under Section 8 of the Clayton Act, competing companies are prohibited from having common board members. In application of this prohibition, Eric Schmidt, CEO of Google, stepped down from the board of Apple in 2009. In the EU, however, such links between companies' boards are not uncommon. In the EU, as well as in the different Member States, there is no such express prohibition of interlocking directorates between competitors. Some economies have even been characterised by very dense networks of companies owing to multiple links among their boards.

This chapter highlights the potential anticompetitive risks raised by interlocking directorates between competitors. The anticompetitive effects stem both from the increased ability to collude enabled by interlocks, as well as the reduced incentive to compete fiercely on markets characterised with numerous social and corporate links. In addition, this chapter touches upon the questions of conflict of interest and problems of directors' independence that are inherent when a board member sits on the boards of two competing companies.

The main claim of this chapter is that there may be an enforcement gap around anticompetitive effects of interlocking directorates in Europe. Although Article 101 TFEU and EU Merger Control regulation theoretically apply to the coordinated

University of Strasbourg. Among other sources, this chapter builds on developments in F Thépot, *The Interaction between Competition Law and Corporate Governance* (Cambridge University Press 2019).

<sup>1 15</sup> USC § 19.

<sup>&</sup>lt;sup>2</sup> Apart from Italy in the financial sector since 201. See F Ghezzi and C Picciau, chapter 11 of this book.

See e.g. F Ferraro and others, 'Structural Breaks and Governance Networks in Western Europe' in B Kogut (ed), The Small Worlds of Corporate Governance (MIT Press 2012); Brullebaut, B., Allemand, I., Prinz, E. and Thépot, F. Persistence in corporate networks through boards of directors? A longitudinal study of interlocks in France, Germany, and the United Kingdom (2022) 16 Rev Manag Sci 1743–82.

and unilateral effects of interlocks, these provisions are of very limited use in practice. Company law in some Member States, such as France, limits the number of board appointments a director may hold, but such solutions are specific to certain types of companies and are largely insufficient to address the anticompetitive effects of interlocking directorates. Principles of corporate governance, such as fiduciary duties, are not binding and seem inappropriate to prevent anticompetitive effects and issues of conflict of interests.

Issues raised by interlocking directorates do not attract the attention they deserve and are notably absent from discussions on possible issues raised by financial links at the EU level.<sup>4</sup> In the US, the discussion about anticompetitive effects of common ownership should also grant more attention to interlocking directorates, particularly in the light of recent findings on the prevalence of interlocking directorates in the US.<sup>5</sup> This is because financial ownership links and interlocking directorates raise similar concerns, critically at the edge of competition law and corporate governance.<sup>6</sup> Therefore, this chapter draws attention on the need to tackle potentially significant issues that are currently largely undebated in Europe.

This chapter demonstrates that the anticompetitive effects of interlocking directorates (Section 10.1) may fall short of EU competition law (Section 10.2). Section 10.3 explains how interlocking directorates may be regulated in other jurisdictions, including in the US, and discusses whether tools of corporate governance may remedy the identified anticompetitive concerns (Section 10.4).

- <sup>4</sup> Unless attached to minority interests, the issue of interlocks was absent from discussion around Merger control reform in 2014 (that was later abandoned). Renewed interest for issues of structural links at EU level (but no discussion of interlocks) M Vestager, 'Competition in Changing Times' (FIW Symposium, Innsbruck, 16 February 2018) https://ec.europa.eu/commission/commissioners/2014–2019/vestager/announcements/competition-changing-times-o\_en; Commission, Management Plan 2017 of DG Competition, Ref Ares(2016)7130280 16; Recent European Parliamenet study: S Frazzani and others, 'Barriers to Competition through Common Ownership by Institutional Investors' (European Parliament 2020) Study for the Committee on Economic and Monetary Affairs, Policy Department for Economic, Scientific and Quality of Life Policies.
- Y Nili, 'Horizontal Directors' 114 NWUL Rev 1179 (2020) Y. Nili, Horizontal Directors Revisited, in this Volume. A recent speech shows that joint effect of common ownership and interlocks are clearly acknowledged. A Finch, 'Concentrating on Competition: An Antitrust Perspective on Platforms and Industry Consolidation' (Tech, Media, and Telecom Competition Conference, Washington DC, 14 December 2018) www.justice.gov/opa/speech/principal-deputy-assistant-attorney-general-andrew-finch-delivers-keynote-address-capitol.
- See chapters in Part IV of this book. Overview of the debate on common ownership, see e.g. Federal Republic of Germany, 'Common Ownership by Institutional Investors and Its Impact on Competition' (OECD Competition Policy Roundtable, December 2017) Contribution by Germany, OECD DAF/COMP/WD(2017)87, 10; CPI Antitrust Chronicle 'Common Ownership revisited' (2019) 2; CPI Antitrust Chronicle 'Index Funds a New Antitrust Frontier?'(2017) 3. For more particular legal and economic analysis, see e.g. J Azar, M Schmalz and I Tecu, 'Anti-Competitive Effects of Common Ownership' (2018) 73(4) J Fin; E Elhauge, 'Essay: Horizontal Shareholding' (2016) 129 Harv L Rev 1267; J Baker 'Overlapping Financial Investor Ownership, Market Power, and Antitrust Enforcement: My Qualified Agreement with Professor Elhauge' (2016) 129 Harv L Rev Forum 212.

# 10.2 ANTICOMPETITIVE EFFECTS OF INTERLOCKING DIRECTORATES

Various studies highlighted that corporate networks across industries, based on interlocking directorates, have been particularly dense in continental Europe, although networks have tended to become less dense and more diffuse over the past decades.<sup>7</sup> These studies also demonstrate that corporate networks based on interlocks have been comparatively less dense in the US and in the UK.8 Germany has long been characterised by dense networks of companies where banks play a central role, leading to the qualification of 'cooperative capitalism' as a feature of the German economy.9 In France, large companies were typically connected through their boards with a high number of CEOs sitting as independent board members of competitors. 10 A recent study analysed the structure and evolution of corporate networks of the top 100 French, British, and German companies over a 14-year period (2006–2019). It found that although networks are composed of weaker links (individuals hold less appointments on average), they are wider in scope (more companies are now part of the networks).11 While it does not specifically provide intra-sectoral information, this study demonstrates the existence of traditionally dense corporate networks in Europe comprising companies from the same industry. As explored by various corporate governance scholars, the existence of interlocking directorates may enhance the firm performance owing to the cognitive input of an experienced board member, and resource potential the link may create.<sup>12</sup>

When held among competing companies, interlocking directorates may give rise to unilateral and coordinated effects.<sup>13</sup> The first impact on competition stems from

- P Windolf, Corporate Networks in Europe and the United States (Oxford University Press 2002); S Chabi and J Maati (2005), 'Les réseaux du CAC40' (2005) 153 Revue du Financier 45–65; Brullebaut and others (n 4). Among the possible reasons for the reduced density may be the limits set by corporate law or governance codes on the number of board seats individuals may hold. For example, in France or Germany, gender diversity requirements may explain that companies appoint directors from a greater pool of individuals.
- See e.g. P Windolf and J Beyer, 'Co-operative Capitalism: Corporate Networks in Germany and Britain' (1996) 47 Bri Journal of Sociol 205–231; K Van Veen and J Kratzer, 'National and International Interlocking Directorates within Europe: Corporate Networks within and among Fifteen European Countries' (2011) 40(1) Economy and Society 1–25; Brullebaut and others (n 4).
- 9 F Ferraro and others, 'Structural Breaks and Governance Networks in Western Europe' in B Kogut (ed), The Small Worlds of Corporate Governance (MIT Press 2012); Windolf and Beyer (n 9) 205–23.
- HJ Yeo, C Pochet and A Alcouffe, 'CEO Reciprocal Interlocks in French Corporations' (2003) 7 J Manag Gov 87–108.
- <sup>11</sup> Brullebaut and others (n 4), see appendix visual representation of corporate networks in 2019.
- According to the resource-based and resource dependence theories; see e.g. C Drago and others, 'Corporate Governance Reforms, Interlocking Directorship and Company Performance in Italy' (2015) 41 Int'l Rev L & Econ 38–49; M Macus, 'Board Capability: An Interactions Perspective on Boards of Directors and Firm Performance' (2008) 38(3) Int Stud Manag Organ 98–116.
- EM Fich and LJ White, 'Why do CEOs Reciprocally Sit on Each Other's Boards?' (2005) 11 J Corp Finan 175; MS Mizruchi, 'What Do Interlocks Do? An Analysis, Critique, and Assessment

the information and communication flows facilitated by interlocking directorates. Board members have access to strategic, accounting, and commercial information as well as information regarding the appointment and compensation of executives. <sup>14</sup> Information and communication between competitors have been shown to facilitate collusion, even when not specifically related to prices and quantities. Information flows may help in reaching a collusive agreement and also provide monitoring tools for competitors to prevent deviation from the collusive agreement. <sup>15</sup> As an example, a network of interlocking directorates has helped stabilise a number of cartels, including the international uranium and diamond cartels. <sup>16</sup> Accordingly, the purpose of the US prohibition of interlocking directorates is expressly to 'avoid the opportunity for the coordination of business decisions by competitors and to prevent the exchange of commercially sensitive information by competitors'. <sup>17</sup> Anticompetitive agreements can also be facilitated by indirect interlocks where competitors sit on the board of a third party. Information exchanges can be more discrete with indirect rather than direct interlocks. <sup>18</sup>

Interlocks may also affect unilateral incentives to compete. Social ties created by the attendance of common board meetings may discourage aggressive commercial strategies towards rivals. If interlocks are widespread within industries, this may reduce the overall intensity of competition. When attached to financial interests, interlocking directorates may provide the ability to influence a competitor's conduct. The remuneration schemes in place may also affect the incentive to compete, especially if closely tied to the firm's performance. 20

- of Research on Interlocking Directorates' (1996) 22 Annu Rev Sociol 273; e.g. H Buch-Hansen, 'Interlocking Directorates and Collusion: An Empirical Analysis' (2014) 29 Int Sociol 253; V Petersen, 'Interlocking Directorates in the European Union: An Argument for Their Restriction' (2016) 27 EBL Rev 821–864; F Thépot, F Hugon, and M Luinaud, 'Cumul de mandats d'administrateur et risques anticoncurrentiels: Un vide juridique en Europe?' (2016) 1 Concurrences 1–11; Nili (n 6).
- <sup>14</sup> UK Office of Fair Trading (OFT), 'Minority Interests in Competitors: A Research Report prepared by DotEcon Ltd' (2010) OFT Economic Discussion Paper Series, OFT1218, 11; JP Schmidt, 'Germany: Merger Control Analysis of Minority Shareholdings – A Model for the EU?' (2013) 2 Concurrences 16.
- <sup>15</sup> KU Kühn, 'Fighting Collusion by Regulating Communication between Firms' (2001) 16 Economic Policy 167; X Vives, Oligopoly Pricing: Old Ideas and New Tools (MIT Press 1999) in P Buccirossi and G Spagnolo, 'Corporate Governance and Collusive Behavior', WD Collins (ed), Issues in Competition Law and Policy 1 (American Bar Association 2008) 10.
- V Petersen, 'Interlocking Directorates in the European Union: An Argument for Their Restriction' (2016) 27 (6) EBL Rev 821, 842.
- Youare D Co v Schneider SA 760 F Supp 362 (SDNY 1991). Nonetheless, directors may still belong to a close network of business elites, linked via common educations or social values through which they can somehow coordinate business decisions. For a discussion of interlocks and business elites, see e.g. WK Carroll and JP Sapinski, 'Corporate Elites and Intercorporate Networks', in John Scott and Peter Carrington (eds), The Sage Handbook of Network Analysis (SAGE Publishing 2011) 180.
- <sup>18</sup> Buch-Hansen (n 14).
- <sup>19</sup> L Flochel, 'The Competitive Effects of Acquiring Minority Shareholdings' (2012) (1) Concurrences 16–17; D Spector, 'Some Economics of Minority Shareholdings' (2011) (3) Concurrences 14.
- <sup>20</sup> UK OFT (n 15) 60–63.

Nevertheless, economic efficiencies are more likely to exist in the area of interlocking directorates than in the situation of minority shareholdings (e.g. where used to align incentives in joint ventures). Information exchange, enabled by such links, may reduce strategic uncertainty which may under certain circumstances be procompetitive if it improves business decision-making. The presence of the board member of a competitor offers the benefit of his expertise and experience which may improve decision-making. Moreover, the exchange of information can create synergies in the control and management of companies facing similar technical and economic issues. A business can also benefit from the reputation of an independent board member and use it in situations where the asymmetry of information may be an obstacle in negotiations to obtain financing from banks or investors. Similarly, the expertise and reputation of the board member of a competitor can facilitate contractual negotiations with suppliers and customers – especially in small businesses.

The anticompetitive effects of interlocking directorates are exacerbated if the corporate governance of the competing companies is weak. Directors sitting on several boards may influence the decision process in one company, as a way of favouring another company of which they are a board member. Directors may also be tempted to disclose confidential information of a company at another company's board meeting. These issues may be mitigated by the quality of the fiduciary duty. A strong fiduciary duty, which indicates good corporate governance, may prevent the director from engaging in these types of practices. A director's fiduciary duty to one company, however, may naturally conflict with their fiduciary duty in another company.<sup>23</sup> Overall, bad quality of corporate governance is more likely to induce directors with shared directorship to compete less aggressively.<sup>24</sup>

#### 10.2.1 Empirical Studies on Competitive Effects

The few existing empirical studies draw contrasting conclusions regarding the actual effectiveness of interlocks as a collusive device. Based on data of a sample composed of 225 firms convicted for participating in cartels between 1986 and 2010,

- <sup>21</sup> Ibid.
- The welfare effect of a reduction in uncertainty depends on the type of decision variable (price or quantity), the type of uncertainty (common demand v idiosyncratic costs), and the characteristics of the goods (substitutes or complements, homogeneous or heterogeneous products). KU Kühn and X Vives, Information Exchanges among firms and their impact on Competition (Office for Official Publications of the European Communities 1995). For a comprehensive analysis of the impact of board interlocks on the firms' performance, see e.g. E Prinz, Les effets des liens personnels interconseils sur la performance de l'entreprise: une analyse comparée entre France et Allemagne (Peter Lang 2011).
- <sup>23</sup> OECD, Common Ownership by Institutional Investors and its Impact on Competition, DAF/ COMP/WD (2017)10.
- <sup>24</sup> UK OFT (n 15) para 6.5. For a discussion of how loyalty to competing companies can articulate in the context of venture capital, see e.g. T Woolf 'The Venture Capitalist's Corporate Opportunity Problem.' Colum Bus L Rev (2001): 473; and M Corradi, Corporate Opportunities: A Law and Economic Analysis (Hart 2021) ch.6

Gonzales and Schmidt found that there is a greater likelihood of collusion when companies have a higher fraction of 'busy' board members, referring to members sitting on the board of other companies, owing to the impact of board connections on collusion.<sup>25</sup> Based on data of EU cartel cases between 1060 and 2012 and corporate links between the companies, a study by Hubert Buch-Hansen concluded that only 12 of the 3318 corporate ties among the 890 companies involved in the cartel cases seem to have been conducive to collusion. Three of them were direct and nine indirect interlocks. Interestingly, however, earlier cases of cartels seem to have been more correlated to interlocking directorates than today.<sup>26</sup> A possible interpretation is that since the 1990s, there is a stricter enforcement against cartel practices. Consequently, companies would refrain from using interlocking directorates to sustain collusion, possibly to avoid attracting the authority attention. Although inherent to the study of typically hidden illegal practices, the correlation was limited to cases of detected explicit collusion. This prevents any conclusion to be made on corporate links and undetected collusion between competitors. Based on estimation of the probability of detection (of cartels that were eventually detected), we can imagine that the population of undetected collusion largely outweighs that of detected cases.<sup>27</sup> A few older studies by Pennings and Burt based on US firms establish a positive correlation between an industry concentration and interlocks.<sup>28</sup> The latter study, however, found a negative relationship between interlocks and concentration, as of intermediate level of concentration. This may be explained by the fact that firms in highly concentrated industries have little need for interlocks to achieve collusive outcomes.<sup>29</sup>

Finally, the following data further supports the idea that interlocks may have facilitated collusive agreements in the past.<sup>30</sup> Building on Connor's statistics on international cartels between 1990 and 2009, I computed the rate of cartel recidivism according to the companies' country of incorporation.<sup>31</sup> Among the 52 leading recidivist companies involved in international cartels, 17 companies originated in France and Germany, and those companies engaged in a total of 213 cartels. This means that French and German companies were liable for 35.3% of the international cartels in

<sup>&</sup>lt;sup>25</sup> TA Gonzales and M Schmid 'Corporate Governance and Antitrust Behavior' (2012) Swiss Institute of Banking and Finance, University of St Gallen Working Paper. www.efmaefm .org/oefmameetings/efma%20annual%20meetings/2012-Barcelona/papers/ArtigaGonzalezSchmid .pdf (accessed March 2021).

<sup>&</sup>lt;sup>26</sup> Buch-Hansen (n 14) 253.

<sup>&</sup>lt;sup>27</sup> E Combe, C Monnier and R Legal, 'Cartels: The Probability of Getting Caught in the European Union' (2008) Bruges European Economic Research Papers, 2.

<sup>&</sup>lt;sup>28</sup> JM Pennings, Interlocking Directorates: Origins and Consequences of Connections among Organizations' Board of Directors (Jossey-Bass Inc 1980); RS Burt RS, Corporate Profits and Cooptation (Academic 1983) (as cited in Mizruchi (n 14) 273–274). For an overview of existing older studies in the US, see Nili (n 6) fn 16 p 1186.

<sup>&</sup>lt;sup>29</sup> Mizruchi (n 14) 273.

<sup>&</sup>lt;sup>30</sup> Although no causation ought to be established here – merely suggesting one among other possible factors.

<sup>&</sup>lt;sup>31</sup> JM Connor, Annex: Table 1. Fifty-Two Leading Recidivists, 1990–2009 in 'Recidivism Revealed: Private International Cartels 1990–2009' (2012) 6 Competition Policy International 101.

that period. In contrast, a total of nine UK and US companies, traditionally characterised by less dense corporate networks, were among the top cartel recidivists, engaging in a total of 88 cartels, which amounts to 14.6% of the international cartels accounted for.<sup>32</sup> Furthermore, France and Germany's combined economies (reflecting possibly, the number of companies in it) amount only to 1/3 or the combined US and UK economies. Thus, weighing this, the proportion of French and German companies involved in cartels may appear to be comparatively even stronger<sup>33</sup>.

Characteristics of the French and German industries, prone to cartel formation, surely plays a key role in explaining the substantial difference in cartel participation.<sup>34</sup> Corporate features, including dense corporate networks – particularly during the period covered by the statistics, may also explain the higher rate of cartel prosecution in France and Germany. Indeed, in Germany, it was suggested that corporate networks played a role as an 'institutional infrastructure for coordination, information exchange, and control in Germany'.<sup>35</sup> In France, on top of interlocking directorates, during the 1990s and 2000s, cross-shareholdings among major companies increased, intensifying the network of corporate ownership.<sup>36</sup> Therefore, corporate ties that establish a 'small world' of corporations may have also been correlated with the multiple cartel convictions in France and Germany between 1990 and 2010.

# 10.3 THE REACH OF EU COMPETITION LAW OVER INTERLOCKING DIRECTORATES

In the EU, a structural link is scrutinised under the Merger Regulation if it is part of an acquisition that confers a 'lasting change in the control of the undertaking'.<sup>37</sup> Interlocking directorates which are not part of an acquisition conferring control

- <sup>32</sup> Interestingly, recent data on US firms contrast with this idea, showing that interlocking directorates are more common, including among companies active in the same industry. Nili (n 6)
- 33 Based on 2020 GDP data, OECD, OECD Data: Gross domestic product (GDP) https://data.oecd.org/gdp/gross-domestic-product-gdp.htm (accessed 1 March 2021)
- 34 Both economies are characterised by industries that are particularly prone to cartel formation because of the type of goods produced and the high barriers to entry into the market. It has been shown that cartel formation is more likely in industries producing homogeneous goods, which are characterised by rather stable demand, or a demand affected by common shock. Moreover, cartel formation is deemed more likely in markets where entry and exit are difficult. If barriers to entry are low, new entrants are attracted by the high profits realised in such market. Gains from collusion are then reduced, while the costs of punishment in case of a deviation are relatively lower. UK OFT, 'Predicting Cartels: A Report Prepared for the Office of Fair Trading by PA Grout and S Sonderegger' (2005). See also RC Marshall and LM Marx, *The Economics of Collusion* (MIT Press 2012).
- 35 B Kogut and G Walker, 'The Small World of Germany and the Durability of National Networks' (2001) 66 Am Soc Rev 317.
- <sup>36</sup> Some related these new ties to the wave of liberalisation in the 1990s. VA Schmidt, 'Privatization in France: The Transformation of French Capitalism' (1999) 17 Environment and Planning C: Government and Policy 445. In subsequent periods, the intensity of these links seems to have reduced, with the emergence of foreign investors in French major companies.
- 37 EU Merger Control Regulation, Recital 20.

can be captured by Article 101TFEU only to the extent there is an agreement or concerted practice between undertakings, or by Article 102 TFEU if there is dominance

### 10.3.1 EU Merger Control

According to the EU Merger regulation, 'control shall be constituted by rights, contracts or any other means which, either separately or in combination and having regard to the considerations of fact or law involved, confer the possibility of exercising decisive influence on an undertaking, in particular by: (a) ownership or the right to use all or part of the assets of an undertaking; (b) rights or contracts which confer decisive influence on the composition, voting or decisions of the organs of an undertaking'. 38 Therefore, the existence of 'decisive influence' is central to the existence of control triggering the application of merger review. Interlocking directorates that confer influence are therefore theoretically part of merger control scrutiny. In addition, the Commission notice on remedies specifically addresses the removal of structural links, including financial or board links to remedy possible competition concerns raised by a merger.<sup>39</sup> The termination of interlocking directorships are thus examples of remedies imposed in the context of a merger raising competitive issues.<sup>40</sup> While the Commission and courts grasp the potential anticompetitive effects of structural links that do not confer control, such effects are unchallenged on a stand-alone basis.<sup>41</sup> The existence of an enforcement gap results from the reliance of EU merger review on the concept of control – which excludes from its scope structural links that do not confer control. relation.

# 10.3.2 Article 101TFEU

The main obstacle to the application of Article 101 TFEU to capture the effects of interlocking directorates is distinguishing a unilateral from a joint conduct, through the finding of an agreement or a concerted practice.<sup>42</sup> If the nomination of a board

<sup>38</sup> Ibid. at art 2.

<sup>&</sup>lt;sup>39</sup> Commission Notice on remedies acceptable under Council Regulation (EC) No 139/2004 and under Commission Regulation (EC) No 802/2004 [2008] OJC 267/1, para 58.

<sup>&</sup>lt;sup>40</sup> See e.g. in AXA/GRE (Case COMP/M.1453), para 34: one of the undertakings to address the competitive issues raised by the merger was that members of the board of directors nominated by GRE would resign upon their replacement by an individual, approved by the Commission, and not employed by AXA. Para 34. Other cases where board links were required to be unwound include *Thyssen/Krupp* (Case COMP/M.1080) *Nordbanken/Postgirot* (Case COMP/M.2567), *Generali/INA* (Case COMP/M.1712).

<sup>&</sup>lt;sup>41</sup> GD Pini, 'Passive – Aggressive Investments: Minority Shareholdings and Competition Law' (2012) 23 EBL Review 575, 653.

<sup>&</sup>lt;sup>42</sup> 'The concept of concerted practice does in fact imply the existence of reciprocal contacts [...]. That condition is met where one competitor discloses its future intentions or conduct on the market to another when the latter requests it or, at the very least, accepts it' Joined Cases T-25/95 and others Cimenteries CBR [2000] ECR II-491 para 1849.

member emanates from an appointment by the general assembly of shareholders, this will not constitute an agreement between undertakings. Yet, if the right to nominate a board member is part of a shareholding agreement, the board nomination may constitute an agreement between undertakings and therefore fall within the Article 101(1) TFEU prohibition.<sup>43</sup>

A relevant question is whether flows of information stemming from interlocking directorates could fall within the scope of Article 101 TFEU. The mere exchange of information between competitors can be an object restriction of competition, if the information relates to individualised and future price information.<sup>44</sup> In practice, to what extent could strategic information received at a board meeting, be in breach of Article 101 TFEU? In Suiker Unie, the Court established that Article 101 TFEU 'preclude[d] any direct or indirect contact between [competitors], the object or effect whereof is either to influence the conduct on the market [...] or to disclose to such competitor the course of conduct which they themselves have decided to adopt or contemplate adopting on the market'.45 In addition, Hüls provides that the presumption that competitors take into account the information in determining their conduct is even greater 'where the undertakings concert together on a regular basis over a long period'. 46 Therefore, the nature of the contact is irrelevant as long as such contact produces an anticompetitive effect. A concerted practice may exist even in the event of a passive reception of information, provided that there is reciprocity of acceptance.<sup>47</sup> Interlocking directorates may amount to a direct and close contact between undertakings. Depending on the nature of the information disclosed at the occasion of board meetings, and the manner in which it is circulated within the companies, such conduct can in principle meet the requirements of a concerted practice.

Having a common board member does not bring the two companies within the same economic entity. Therefore, information exchange between those two companies cannot be considered as an intra-corporate relation precluding the application of Article 101 TFEU.<sup>48</sup> It is, however, difficult to consider that the mere exchange of information during a board meeting, which is internal to the company, can be sufficient to establish a concerted practice. To my knowledge, there is no case where a

F Caronna, 'Article 81 as a Tool for Controlling Minority Cross Shareholdings between Competitors' (2004) 29 EL Rev 494; Elhauge (n 7) however, takes the view that the requirement of agreement or concerted practice is no obstacle to the application of Article 101 TFEU.

<sup>&</sup>lt;sup>44</sup> Communication from the Commission – Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements Text with EEA relevance OJ C 11/1 ('Horizontal Guidelines') General Principles on the competitive assessment of information exchange.

<sup>&</sup>lt;sup>45</sup> Case 40/73 Suiker Unie v Commission [1975] ECR 1663 para 174.

<sup>&</sup>lt;sup>46</sup> Case C-199/92 P Hüls [1999] ECR I-4287 para 162.

<sup>47</sup> See (n 43)

<sup>&</sup>lt;sup>48</sup> T Staahl Gabrielsen, E Hjelmeng, and L Sorgard, 'Rethinking Minority Share Ownership and Interlocking Directorships – The Scope for Competition Law Intervention' (2011) 36 EL Rev 839, 84.

concerted practice was identified in such context, reflecting the practical difficulty for competition authorities to produce tangible evidence of a concerted practice based on the mere existence of structural links.<sup>49</sup> In sum, Article 101 TFEU theoretically applies to an information exchange related to structural links, but the establishment of an agreement or concerted practice between undertakings may prove difficult.<sup>50</sup>

### 10.3.3 Article 102 TFEU

In addition, anticompetitive effects could be reviewed in the context of collective dominance, the abuse of which may also be in breach of Article 102 TFEU.<sup>51</sup> Collective dominance can exist when economic links between undertakings make them together hold a dominant position vis-à-vis other competitors on the same market.<sup>52</sup> In *Irish Sugar*, a situation of collective dominance was established based on a combination of economic and corporate ties between two companies, including interlocking directorates.<sup>53</sup> Therefore, anticompetitive effects of structural links falling short of Article 101 TFEU could be theoretically be reviewed under Article 102 TFEU even if undertakings are individually not dominant, provided there is an 'abuse' of this collective dominance. The main difficulty would be, however, to establish an abuse of that position of collective dominance. To date, there are only very few cases of collective dominance. One of the reasons is that anticompetitive issues raised in such cases may not fit the analytical framework and legal standards developed in cases of single undertaking abuses, more focused on exclusionary conduct. Cases of collective dominance based on structural links would, instead, be exploitative types of abuses, typically involving higher prices, which are far more difficult to establish.<sup>54</sup>

To sum up, limits to applying Article 101 TFEU relate to the difficulty of finding an agreement between undertakings as the corporate relation may not be reciprocal.

- <sup>49</sup> F Thépot, F Hugon, and M Luinaud (2016), 'Cumul de mandats d'administrateur et risques anticoncurrentiels: Un vide juridique en Europe?' (2016) 1 Concurrences 1–11.
- 5° Elhauge clearly states that the requirement of concerted practice or agreement is no obstacle in the case of structural links. Although he's right in theory, in practice the obstacles presented complicate the reach of Article 101 TFEU to structural links. E Elhauge, "Tackling Horizontal Shareholding: An Update and Extension to the Sherman Act and EU Competition Law" (OECD Competition Policy Roundtable, November 2017) Background Paper for 128th meeting of the OECD Competition Committee, OECD DAF/COMP/WD(2017) 95.
- 51 'Any abuse by one or more undertakings of a dominant position within the internal market or in a substantial part of it shall be prohibited' (emphasis added). Article 102 TFEU.
- <sup>52</sup> O Okeoghene, 'Collective Dominance Clarified?' (2004) 63(1) CLJ 44.
- 53 Irish Sugar (Case COMP 97/624) Commission Decision 7/624/EC [1997] OJ L 258/1, para 112.
- A Jones, B Sufrin, N Dunne, EU Competition Law: Text, Cases, and Materials (7th edn, Oxford University Press 2019) 696. Elhauge, however, argues that a case of excessive pricing could have better substantial grounds where high prices result from structural links rather than from monopoly power or tacit collusion. See Elhauge (n 51) 2. However, usual difficulties related to administrability, and willingness of authorities to bring exploitative abuse cases remain. In addition, the limited decisional practice on collective dominance provides little guidance on how to handle the anticompetitive effects of structural links.

Coordinated effects stemming from information flows may be caught, but to date, there is no case of violation based on the type of information usually communicated within the private remit of a board. Article 102 TFEU potentially enabling an extension of the concept of influence to capture non-coordinated effects only applies in the context of dominance. Collective dominance may provide a better avenue to control the negative impacts of structural links in concentrated markets; this would, however, require willingness from the Commission to re-open excessive prices line of cases.

# 10.4 INTERLOCKING DIRECTORATES IN OTHER JURISDICTIONS

## 10.4.1 *In the US: a* per se *Prohibition*

In the US, interlocking directorates are subject to a specific provision. Section 8 of the Clayton Act prohibits any 'person' from simultaneously serving as a director or officer of two competing corporations.<sup>55</sup> The degree of competition required for the application of Section 8 is such that its elimination 'by agreement between [the companies] would constitute a violation of any antitrust laws'.<sup>56</sup> Section 8 prohibition only applies to companies of a certain size.<sup>57</sup> In addition the section does not apply when the overlap between the competing companies is *de minimis*.<sup>58</sup>

The US has a particular approach to interlocking directorates. A specific provision on the issue of interlocking directorates only exists in very few jurisdictions.<sup>59</sup> In addition, those jurisdictions enable the interlock to be justified based on a lack of competitive injury, which contrasts with the per se prohibition in Section 8.<sup>60</sup> A brief historical background sheds some light on the US antitrust peculiarity. The introduction of Section 8 in 1914 is closely related to concerns about monopolies in a period of broad public mistrust in business.<sup>61</sup> Following a proposal by the

<sup>55 15</sup> USC \$19 (a)(1) (A).

<sup>&</sup>lt;sup>56</sup> 15 USC §19 (a)(1) (B).

<sup>&</sup>lt;sup>57</sup> The Act applies if each of the corporations has capital, surplus, and undivided profits of more than \$10,000,000, adjusted for inflation.

<sup>&</sup>lt;sup>58</sup> 'A) the competitive sales of either corporation are less than \$1,000,000, adjusted for inflation;

<sup>(</sup>B) the competitive sales of either corporation are less than 2 per centum of that corporation's total sales; or

<sup>(</sup>C) the competitive sales of each corporation are less than 4 per centum of that corporation's total sales'.

<sup>&</sup>lt;sup>59</sup> Chile expressly prohibits interlocking directorates through Art 3, Letter d) of the Decree Law 211 www .fne.gob.cl/en/antitrust/interlocking-directorates/ Japan, Act on Prohibition of Private Monopolization and Maintenance of Faire Trade, Act No 54 of 1947, ch IV, Art 13; Indonesia: Indonesia Competition Law No 5 of 1999, Art 26; Italy for the financial sector: Art 36 of Decree Law No 201 of December 6, 2011, converted into Law No 214/2011: 'Protection of competition and personal cross-shareholdings in credit and financial markets'.

<sup>&</sup>lt;sup>60</sup> American Bar Association (ABA) Section of Antitrust Law, *Interlocking Directorates: Handbook on Section 8 of the Clayton Act* (ABA Publishing 2011) 94–96. Except for Chile which has a similar 'per se' prohibition; and Italy, which prohibits interlocks in the financial sector. See chapter by F Ghezzi and C Picciau, Chapter 11 of this book.

<sup>61</sup> *Ibid*. at 1.

Democratic Party in 1908, all three political parties called for legislation on interlocking directorates in 1912. In that context, several reports were issued to publicise the scope of interlocking directorates in sectors, such as the railroad and steel markets, as well as in financial institutions.<sup>62</sup>

Section 8 is the outcome of a political and legislative process, largely influenced by the work of Louis Brandeis, advisor to President Wilson. His position with regard to the harm created by interlocking directorates was as follows:

The practice of interlocking directorates is the root of many evils. It offends laws human and divine. Applied to rival corporations, it tends to the suppression of competition and to violation of the Sherman law. Applied to corporations which deal with each other, it tends to disloyalty and to violation of the fundamental law that no man can serve two masters. In either event it tends to inefficiency, for it removes incentives and destroys soundness of judgment. It is undemocratic, for it rejects the platform: 'A fair field – and no favors' – substituting the pull of privilege for the push of manhood.<sup>63</sup>

In an address to Congress, President Wilson defended the necessity for stricter antitrust laws with the necessity to 'open the field to scores of men who have been obliged to serve when their abilities entitled them to direct'. Interlocking directorates were then perceived as an obstacle to the opportunities that the American economy was supposed to provide. <sup>64</sup> Therefore, much broader concerns than unilateral and coordinated effects, also including the issue of conflicts of interests between shareholders and directors, drove the introduction of Section 8. The Act finally adopted in 1914 reflected a narrower approach taken by Congress to limit the scope of the prohibition to certain types of interlocks. <sup>65</sup> The last amendment of the Act, in 1990, was aimed at providing greater exceptions to the per se prohibitions (raising the jurisdictional threshold and exempting interlocks having de minimis overlap) while extending the prohibition to officers in addition to directors. <sup>66</sup> Section 8 of the Clayton Act is enforced by counsels to corporations, and there has been very little litigation. <sup>67</sup> Private litigation cases show that Section 8 is closely related to issues of corporate governance. Claims have typically been lodged by corporations in order to prevent an acquisition or proxy fight, or to remove an interlocked director; they have also been brought by shareholders of an alleged interlocked company to reject a merger or in support of a derivative action. <sup>68</sup> Recent investigations by the FTC

<sup>&</sup>lt;sup>62</sup> See, for example, the Stanley Committee and Pujo Committee reports, *ibid.* at 3.

<sup>63</sup> LD Brandeis, Other People's Money and How Bankers Use it (Seven Treasures Publications 1914) 51.

<sup>&</sup>lt;sup>64</sup> AH Travers, 'Interlocks in Corporate Management and the Antitrust Laws' (1968) 46 Tex L Rev 819, 830.

<sup>65</sup> ABA Section of Antitrust Law (n 61) 4.

<sup>66</sup> Ibid. at 8-9.

<sup>&</sup>lt;sup>67</sup> Ibid. at 2. Cases include US v WT Grant Co 345 US 629 (1953); SCM Corp v FTC 565 F2d 807 (1977); TRW, Inc v FTC 647 F2d 942 (9<sup>th</sup> Circ 1981); Borg-Warner Corp v FTC 746 F2d 108 (2<sup>nd</sup> Circ 1984).

<sup>&</sup>lt;sup>68</sup> Ibid. at 22–23, e.g. Charming Shoppes v Crescendo Partners II 557 T Supp 2d 621 (ED Pa 200): attempt to prevent an acquisition or proxy fight; Protectoseal Co. v Barancik 484 F2d 585 (7<sup>th</sup> Circ 1973): or to remove an interlocked director.

led, for example, to the resignation from the board of Google of Arthur Levinson, a member of Apple's board. Google's CEO Eric Schmidt, who was director of both companies, stepped down from Apple's board. <sup>69</sup> In 2016, the DOJ obtained the restructuring of a transaction that would have given a company the right to appoint a member on its competitor's board. <sup>70</sup>

In addition, anticompetitive effects of interlocking directorates that may not be reached by Section 8 can be reviewed under Section 1 of the Sherman Act as well as under Section 5 of the Federal Trade Commission Act.<sup>71</sup> A specific historical and economic context in which the US provision emerged explains the far-reaching prohibition of interlocking directorates between competitors, irrespective of whether they actually harm competition.

Recent evidence shows, however, that interlocking directorates persist (and even tend to increase) despite this far-reaching prohibition. A study by Nili of 1500 S&P US companies over the years 2010–2016 demonstrates that intra-industry links are very common.<sup>72</sup> It shows that, in 2016, around 25% of companies shared at least one common board member with a company operating in the same narrowly defined sector (corresponding to one code of the SIC/NAICS classification systems). These links constitute potential Section 8 violations.<sup>73</sup>

## 10.4.2 Interlocking Directorates in EU Member States

In EU Member States, the problem of interlocking directorates is rather a matter of corporate law. In France, the French Commercial Code governs different aspects of the composition and functioning of the board of directors of limited companies.<sup>74</sup> The law limits the number of seat appointments held as top executive or board member to five. In addition, the 'Macron law'<sup>75</sup> has reduced that number to

<sup>&</sup>lt;sup>69</sup> Federal Trade Commission, 'Statement of FTC Chairman Jon Leibowitz Regarding the Announcement that Arthur D. Levinson Has Resigned from Google's Board' (12 October 2009).

<sup>7</sup>º US Department of Justice, "Tullett Prebon and ICAP Restructure Transaction after Justice Department Expresses Concerns about Interlocking Directorates' (14 July 2016) www.justice .gov/opa/pr/tullett-prebon-and-icap-restructure-transaction-after-justice-department-expressesconcerns.

D Feinstein, 'Have a Plan to Comply with the Bar on Horizontal Interlocks' (Federal Trade Commission, 23 January 2017) www.ftc.gov/news-events/blogs/competition-matters/2017/o1/have-plan-comply-bar-horizontal-interlocks; FTC Commissioner J Thomas Rosch, 'Remarks before the University of Hong Kong: "Terra Incognita: Vertical and Conglomerate Merger and Interlocking Directorate Law Enforcement in the United States" (Hong Kong, 11 September 2009); s 5 of FTC Act prohibits 'unfair methods of competition' 15 USC \$45.

<sup>&</sup>lt;sup>72</sup> In 2016, 81% of companies have interlocks within industries broadly defined (possibly involving competitors but not strictly).

<sup>&</sup>lt;sup>73</sup> Nili (n 6) 1215.

<sup>&</sup>lt;sup>74</sup> Art L 225–17 of the French Commercial Code.

<sup>75</sup> Law N° 2015–990 of 6 August 2015.

three appointments for publicly listed companies of more than 5,000 employees in France, or at least 10,000 worldwide.<sup>76</sup>

Italy is the only country having adopted a specific regulation entitled 'Protection of competition and cross corporate ties in the banking and finance industry' to deal with the anticompetitive effects of interlocks among competitors.<sup>77</sup> In 2011, following a report of the competition authority on problems of corporate governance and competition in the financial industry, Italy adopted a series of specific economic measures.<sup>78</sup> These measures aim at increasing competition and ethical governance in industries where low economic performance seemed to stem from the multitude of personal ties linking corporate governance bodies.<sup>79</sup> This regulation prohibits any person appointed as a manager, supervisor, or auditor of a company operating in the financial and insurance industry, from holding a similar appointment with a competitor. Persons holding more than one such appointment must comply within 90 days and decide which one to keep. Failure to comply leads to the termination of all appointments, either by the company or by the national regulator.<sup>80</sup>

With the exception of Italy in the banking and financial industry, limitations of interlocking directorates do not specifically target competitors. These tools, existing at the national level in a few EU Member States, offer a variety of different solutions and have, in practice, a limited impact on cross-border operations.

#### 10.5 PRINCIPLES OF CORPORATE GOVERNANCE

Structural links are at the heart of corporate governance systems. This section discusses whether principles of corporate governance can set constraints over the anticompetitive effects of interlocking directorates. Competition law may adjust its boundaries to address common issues that corporate laws and corporate governance fail to address. This overall shows that the discussion at the EU level require a multidisciplinary approach to the issue of interlocking directorates.

While protection of minority shareholders and the freedom to appoint board members are essential to corporate governance, these corporate arrangements can also hinder rivalry between companies. In addition, policies regarding corporate governance encourage an active role by institutional investors in the corporate

This gives binding force to the provision set by the non-binding AFEP/MEDEF code of conduct that provides that 'the board member of a public company may not hold more than two other appointments in public companies outside of his own group, including foreign companies', Article 19.

V Falce, 'Interlocking Directorates: An Italian Antitrust Dilemma' (2013) 9 JCL & E 457–472. See chapter by F Ghezzi and C Picciau, chapter 11 of this book.

 $<sup>^{78}</sup>$  Article 36 Protection of Competition and Personal Cross Shareholdings in the Credit and Financial Markets of the Law Decree N° 201/2011, converted by Law N° 214/2011.

<sup>&</sup>lt;sup>79</sup> Falce (n 79) 460

<sup>80</sup> F Ghezzi, Interlocking Directorates in the Financial Sector: The Italian Job (art 36 law 214/2011) – An Antitrust Perspective' (Università Bocconi 2012).

governance, which seems to conflict with the competitive concerns raised by common ownership.  $^{81}$ 

Yet, corporate governance and competition law seem to converge on other issues. A core principle of corporate governance is the fiduciary duty of management to shareholders. Fiduciary duty may mitigate the anticompetitive effects of structural links. In the context of interlocking directorates, a strong fiduciary duty may prevent a common board member from disclosing information from one company to the other. However, a director's fiduciary duty to one company may naturally conflict with their fiduciary duty to another company. Figure 1.

Independence of decision-making is another important principle of corporate governance. Accordingly, decisions should be made in the company's best interest, without consideration of other companies. The French Asset Management Association warns against the risk of interlocking directorates as undermining transparency and independence of decision-making, unless associated with a strategic economic alliance. In practice, however, an increase in price taken in the interest of a competitor may be difficult to identify. Collecting evidence and taking action, such as voting to remove a director in breach of a fiduciary obligation, could be difficult and risky for the shareholders. Further exploration of corporate governance mechanisms is therefore critical to understanding the practical ability of a board to raise prices unfavourably for the company, for the financial benefits of a competitor.

As an example, the French Court of Cassation reaffirms the legal requirement of fiduciary duty for top executives, which then applies to those sitting on the board of a competing company. In addition, the court clarified that this duty forbids the chief executive from commercial negotiation in his capacity as manager of another

OECD (n 7) 36. See also Chapter 12 by Schmalz and Chapter 13 by Rock and Rubinfeld in this book.
As an example, the French Court of Cassation reaffirms the legal requirement of fiduciary duty for top

management: Cass com, 27 February 1996, JCP G 1996, II, 22665, note J Ghestin.

84 See e.g. AFEP-MEDEF Code of Corporate Governance of Listed Corporations (2016) s 8 and s 19.

86 AFG, 'Recommandations sur le gouvernement d'entreprise' (2020) 19 www.afg.asso.fr/wp-content/uploads/2020/01/recommandations-sur-le-gouvernement-d-entreprise-2020-fr.pdf.

<sup>83</sup> OECD Policy Roundtable (n 7) 34. In addition, fiduciary duty which was for long considered as one 'mandatory' rule of corporate law, is being increasingly 'waived' across jurisdictions. In such instances, fiduciary duty no longer acts as a safeguard against identified negative impacts of interlocks. For an account of this process, see e.g. G Rauterberg and E Talley 'Contracting Out of the Fiduciary Duty of Loyalty: An Empirical Analysis of Corporate Opportunity Waivers' (2017) 117 Colum L Rev 1075–151; M Corradi, Corporate Opportunities: A Law and Economic Analysis (Hart 2021)

<sup>85</sup> See the scenario of fiduciary duty limiting the anticompetitive effects of partial acquisitions in SC Salop and DP O'Brien, 'Competitive Effects of Partial Ownership: Financial Interest and Corporate Control' (2000) 67 Antitrust LJ 568, 580.

<sup>87 &#</sup>x27;Real-world' corporate governance factors that affect the financial incentives on competition – incomplete information, management's incentives, and ability to capture benefits. JB Dubrow, 'Challenging the Economic Incentives Analysis of Competitive Effects in Acquisitions of Passive Minority Equity Interests' (2001) 69 Antitrust LJ 131.

company within the same industry. 88 However, such requirement, rather limited to apprehend the whole spectrum of anticompetitive effects, only applies to executives (and not to all directors) of French companies. In addition, the code of corporate governance recommends that as an ethical rule, a board member should be bound to report to the board any actual or potential conflict of interest, and refrain from voting on the related resolution. 89 Although no express mention is there made of conflicts of interests arising from individuals sitting within multiple board meetings, generic rules on conflicts of interest are likely to encompass such instances.

Interlocking directorates may pose additional problems both for corporate governance and competition law, if top managers favour the selection (or exclusion) of board members based on how passive (or active), they are on other boards, in an effort to retain control over the board.<sup>90</sup> In addition, mutual interlocks can reflect and contribute to CEO entrenchment, resulting in higher compensation and lower turnover.<sup>91</sup>

### 10.5.1 Conclusion: Competition Law 'stepping in'?

Legal constraints provided by corporate laws do not bridge the regulatory gap that exists at the EU level. General principles of corporate governance, such as independence of decision-making, have a limited ability to address competitive concerns, even when they closely relate to common issues. In Italy, for example, a competition approach may have stepped in to address issues that corporate governance modernisation has so far insufficiently addressed. Some have argued that interlocking directorates should remain beyond the realm of competition law. Member States may provide effective *ex ante* solutions to the problem, especially if the practice of interlocks primarily has national features. The need of an EU-wide solution also depends on whether there is a growing tendency for cross-border interlocking directorates. At a EU-wide regulation prohibiting interlocks among

<sup>89</sup> AFEP-MEDEF, Code of Corporate Governance of Listed Corporations (2016) s 19.

93 BM Gerber, 'Enabling Interlock Benefits While Preventing Anticompetitive Harm: Toward an Optimal Definition of Competitors Under Section 8 of the Clayton Act' (2007) 24 Yale J on Reg 107, 112.

<sup>&</sup>lt;sup>88</sup> Affaire Clos du Baty, Chambre commerciale de la Cour de cassation, 15 novembre 2011, n° 10–15049. The scope of this duty seems to be expending as illustrated by recent decisions. See F Thépot et al (n 5050) fn 47.

<sup>9</sup>º EJ Zajac and JD Westphal, 'Director Reputation, Power, and CEO-Board the Dynamics of Board Interlocks' (1996) 41 Admin Sci Q 507.

<sup>&</sup>lt;sup>91</sup> EM Fich and LJ White, 'CEO Compensation and Turnover: The Effects of Mutually Interlocked Boards' (2003) 38 Wake Forest L Rev 935.

<sup>&</sup>lt;sup>92</sup> L Enriques and P Volpin, 'Corporate Governance Reforms in Continental Europe' (2007) 21 J Econ Perspect 117.

Studies reach contrasting conclusions in respect of cross-border interlocks. Carroll et al, for example, show that from 1996 to 2006, while national ties started to slightly decrease, European networks were increasing. WK Carroll, M Fennema, and EM Heemskerk, 'Constituting corporate Europe: A study of elite social organization' (2010) 42 Antipode 811–843; Brullebaut and others (n 4) find no evidence of increasing transnational board links between France, Germany, and the UK over the period 2006 to 2019.

competitors may seem too ambitious, significant limitations of interlocking directorates could be introduced nationally to remedy issues that are of concern for both corporate governance and competition law. In any case, a comprehensive impact assessment of the extent of such issues in Europe should form part of any proposal for reform and would supplement the identification of theoretical concerns provided here. Finally, the issues of common ownership, currently highly debated especially, and that of interlocking directorates, should be approached jointly. They raise similar competitive concerns and solutions to remedy those are critically at the junction of competition law and corporate governance. Mapping corporate networks created by both types of structural links would illuminate this debate.

# Appendix<sup>97</sup> Corporate networks in France, Germany, and the UK – largest 100 companies in 2019

- 95 Example of such studies: Brullebaut and others (n 4).
- <sup>96</sup> Especially in light of recent evidence by Nili (n 6) and study by Azar, J. Common Shareholders and Interlocking Directors: The Relation Between Two Corporate Networks (2022) 18 Journal of Competition Law & Economics 75–98.
- <sup>97</sup> In Brullebaut, B., Allemand, I., Prinz, E. and Thépot, F. Persistence in corporate networks through boards of directors? A longitudinal study of interlocks in France, Germany, and the United Kingdom (2022)16 Rev Manag Sci 1743–82.

