THE EVOLUTION OF ANTITRUST IN THE DIGITAL ERA:
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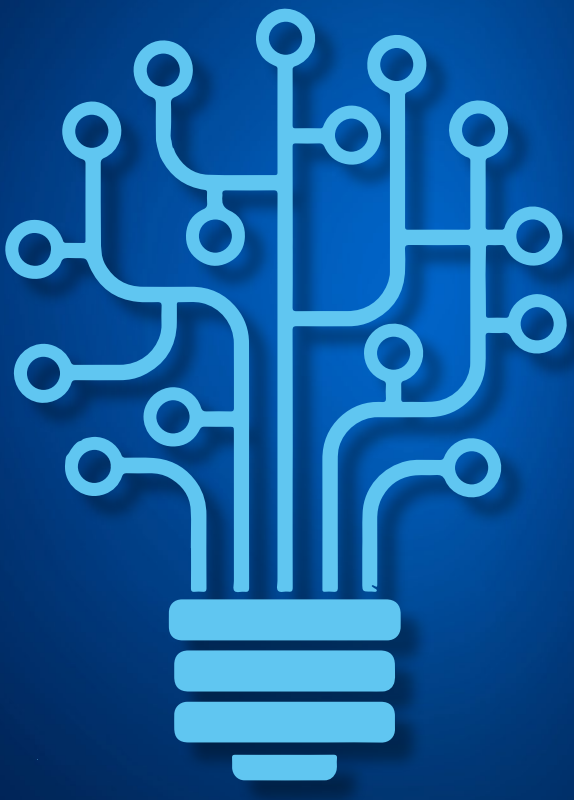

CPI COMPETITION POLICY INTERNATIONAL

hiQ v. Linkedin: A Clash Between Privacy and Competition

By Maureen K. Ohlhausen & Peter Huston [1]

Abstract

Advances in data storage, processing power, and system architecture allow today's computers to solve tasks of extraordinary computational complexity, paving the way for innovative, reliable, and lucrative predictive analytics. The implications for both privacy law and antitrust law can be significant. Although competition law and privacy law often coexist peacefully, tension between the two realms can arise, as they have in hiQ v. LinkedIn, a case pending in the Northern District of California. HiQ applies its proprietary algorithms to data scraped from LinkedIn's servers (without LinkedIn's authorization) to provide "people analytics" to its employer customers. One product warns employers if employees' LinkedIn activity suggests they may be considering changing jobs. LinkedIn, invoking the privacy rights of its members, employed technical measures to block hiQ's automated bots from accessing the data on LinkedIn's servers. HiQ alleges that LinkedIn's justification for attempting to block hiQ is pretextual and that it is really seeking to insulate itself from potential competition.

The case demonstrates a legal policy dilemma. Protecting privacy by limiting the spread of data can reduce the benefits of competition by denying upstart rivals access to the data they need to compete and entrenching incumbents (who may already be dominant). Conversely, attempting to bolster competition by insuring that competitive rivals have easy access to personal data can diminish privacy by distributing data in ways that consumers may not anticipate or want.

Noting that hiQ would go bankrupt without access to the data on LinkedIn's platform, the district court gave hiQ an early victory, enjoining LinkedIn from employing its active technical measures to block hiQ's bots. The Ninth Circuit agreed. In reaching their opinions, both the District Court and Ninth Circuit disregarded the concepts of consumer sovereignty about privacy choices and individual control over personal data. This is surprising given the current heightened sensitivity to digital privacy, as reflected in California's Consumer Privacy Act ("CCPA") which, ironically, took effect just months after the Ninth Circuit issued its opinion.

1 Partners, Baker Botts, LLP.

I. INTRODUCTION

Meet Jill. She's not happy at work. Her employer doesn't pay her what she's worth and her boss is a jerk. She decides to start looking for a new job, discretely. As a first step, Jill wants to make sure her profile on LinkedIn, the popular on-line professional network, is sparkling. She updates her list of accomplishments, polishes up the description of her experience, solicits some peer recommendations, and sends out a round of invitations to join her network. To keep her plans private, she double-checks her LinkedIn settings to make sure that each change she makes to her profile is not broadcast to her connections, which include several work colleagues.

Unfortunately, Jill's goal of keeping her job search covert is not shared by hiQ Labs, a data analytics company. HiQ's automated bots scrape data from LinkedIn's servers and run it through the hiQ algorithm. HiQ determines that Jill is a "flight risk." For a fee, and unbeknownst to Jill, hiQ presents this determination to her employer.

At this point, things could veer in a couple of different directions. Maybe Jill's employer, armed with hiQ's "flight risk" conclusion, realizes how valuable she is, offers her a raise and fixes the issues that caused her to be dissatisfied in the first place. On the other hand, maybe Jill's boss demotes her, makes her life even more miserable, and sabotages her chances of finding another job. Either way, she did not consent to hiQ's analysis and use of her LinkedIn data and her life is altered from the course she planned.

Such a scenario is at the heart of litigation now pending between hiQ and LinkedIn. The case raises a number of questions at the intersection of competition and privacy law: Are restrictions on access to data necessary to protect against exploitation of consumers, or are they anticompetitive barriers slowing innovation and insulating incumbents against nascent rivals? Who should be able to access data on digital platforms? What are the rights of consumers, platforms, and competitors, and how should they be balanced?[2]

II. *hiQ LABS, INC. v. LINKEDIN CORPORATION*

Most people are familiar with LinkedIn, the on-line professional network that allows its 500 million members to share their professional histories and interests. HiQ Labs is younger, much smaller, and less well-known. HiQ's automated bots scrape LinkedIn's servers and apply predictive algorithms to the data. HiQ sells the results of its analysis, which it calls "people analytics," to Fortune 500 clients looking for insights on their workforces. HiQ's business model poses a problem for LinkedIn, which works to preserve the trust and goodwill of its members and informs its members that it prohibits automated bots from scraping the site.

2 For a helpful survey of various court approaches to screen-scraping cases, see George H. Fibbe, Screen-Scraping and Harmful Cybertrespass after Intel, 55 Mercer L.Rev. 1011 (2004).

In 2017, LinkedIn sent hiQ a letter demanding that it cease and desist scraping LinkedIn's site or risk legal action under the federal anti-hacking law known as the Computer Fraud and Abuse Act ("CFAA"), California's corollary, the Computer Data Access and Fraud Act ("CDAFA"), codified at California Penal Code section 502, *et seq*., the Digital Millennium Copyright Act, and the state common law of trespass. LinkedIn also made sure that the various technological systems it employs to thwart automated bots were working against hiQ's incursions. Those systems identify patterns suggesting non-human activity and throttle or block the activity. After receiving LinkedIn's cease and desist letter, hiQ promptly sued LinkedIn in the Northern District of California seeking a declaratory judgment that it was not violating the law. It also accused LinkedIn of violating California's Unfair Competition Law and interfering with hiQ's contracts, among other claims. HiQ moved for a preliminarily injunction to enjoin LinkedIn from employing its blocking technologies against hiQ and asked the court to order LinkedIn to withdraw the cease and desist letter.

Responding to the preliminary injunction motion, LinkedIn pressed the privacy interests of its members. It noted that "hiQ makes no enforceable commitment in a privacy policy or otherwise to LinkedIn's members regarding what it will do with their data or to whom it may sell or transfer it, nor is there any way for LinkedIn members to 'opt out' of hiQ's processing and selling of their data."[3] It also noted,

> [I]f a LinkedIn member decides to delete his or her account, LinkedIn pledges to permanently delete the account and all of the member's information within 30 days. LinkedIn does not keep a copy of that data. The power to remove one's own information from LinkedIn helps ensure that members have control of their own information. hiQ does not claim that it makes any similar pledge, nor could it, as it has no contractual relationship with LinkedIn's members.[4]

Despite this argument, District Court Judge Edward Chen granted hiQ's motion for preliminary injunction.[5] Judge Chen credited hiQ's assertion that it would go bankrupt without access to the data and therefore found that the balance of equities tipped sharply in favor of hiQ. Judge Chen was skeptical of LinkedIn's claim that members opt not to broadcast their profile changes primarily to keep those changes private from their employers. Applying the sliding scale approach to preliminary in-

3 LinkedIn Corp's Opposition to Plaintiff's Motion for a Temporary Restraining Order at 3, *HiQ Labs, Inc. v. LinkedIn Corp*., 273 F. Supp. 3d 1099 (N.D. Cal. 2017), *aff'd*, 938 F.3d 985 (9th Cir. 2019) (Dkt. 31).

4 *Id*. at 6.

5 *HiQ Labs, Inc. v. LinkedIn Corp*., 273 F. Supp. 3d 1099 (N.D. Cal. 2017), *aff'd*, 938 F.3d 985 (9th Cir. 2019).

junctions, Judge Chen held that because the equities tipped sharply in favor of hiQ, he needed to find only that hiQ had raised serious questions going to the merits to issue a preliminary injunction.

LinkedIn appealed the injunction to the Ninth Circuit. The appeal raised sensitive and highly charged issues — access to data, privacy, competition, innovation, and free speech. The case attracted appellate heavy-weights: Harvard Professor Lawrence Tribe joined the briefing for hiQ and former United States Solicitor General Donald Verrilli, Jr. argued for LinkedIn. The case also attracted numerous *amici*. Interestingly, two non-profit organizations dedicated to digital privacy wound up on opposite sides. The Electronic Frontier Foundation ("EFF") submitted a brief in support of hiQ, while the Electronic Privacy Information Center ("EPIC") supported LinkedIn. At oral argument, the court allowed the parties to argue well-beyond their allotted time.

The Ninth Circuit affirmed the preliminary injunction.[6] The court agreed with Judge Chen's conclusion on irreparable harm and the balance of the equities.[7] As to whether hiQ had raised serious questions on the merits, the court first addressed hiQ's intentional interference with contract claim. HiQ had contracts to supply its "people analytics" product to several clients. The court noted that hiQ would be unable to perform without access to the LinkedIn data. For its part, LinkedIn alleged a "legitimate business purpose" in protecting its members data. It argued that protecting its members privacy was essential to preserving member trust and goodwill. The court, weighing the interest of contractual stability against LinkedIn's interest of protecting its members and its investment in the platform, held that LinkedIn's technical measures to block hiQ had not been recognized as acceptable justifications for contract interference.[8]

Critically, the court cited evidence that LinkedIn had plans to offer services similar to some that hiQ offered, making hiQ a potential competitor:

> LinkedIn's conduct may not be within the realm of fair competition. . . . If companies like LinkedIn, whose servers hold vast amount of public data, are permitted selectively to ban only potential competitors from accessing and using that otherwise public data, the result—complete exclusion of the original innovator in aggregating and analyzing the public information—may well be considered unfair competition under California law.[9]

6 *HiQ Labs, Inc. v. LinkedIn Corp.*, 938 F.3d 985 (9th Cir. 2019).

7 *Id.* at 993-995.

8 *Id.* at 997.

9 *Id.* at 998 (citations omitted).

The court also held that LinkedIn's interest in protecting its members' data was relatively weak because members who requested that their profile changes not be broadcast may have made that election merely to avoid annoying their connections with notifications, not to protect their own privacy.[10]

As to LinkedIn's allegation that hiQ is violating the anti-hacking provisions of the CFAA by accessing LinkedIn's servers without authorization, the court held that hiQ had raised a serious question as to whether the CFAA's "without authorization" concept even applied. The court noted that prior to LinkedIn banning hiQ and employing its technological systems to thwart it, hiQ had not needed prior authorization to view LinkedIn member information.[11] For example, the data hiQ scraped was never password protected.[12] LinkedIn has petitioned the Supreme Court for a writ of certiorari on the CFAA issue.[13] The Court had not ruled on that petition as of the writing of this article.

Lastly, the court addressed how granting or denying an injunction would affect the public interest.[14] HiQ had argued that "letting established entities that already have accumulated large user data sets decide who can scrape that data from otherwise public websites gives those entities outsized control over how such data may be put to use."[15] For its part, LinkedIn argued that the preliminary injunction allowed hiQ to freeride and would invite malicious actors to attack its servers, forcing LinkedIn and other companies with public websites "to choose between leaving their servers open to such attacks or protecting their websites with passwords, thereby cutting them off from public view."[16] The court sided with hiQ:

> [G]iving companies like LinkedIn free rein to decide, on any basis, who can collect and use data—data that the companies do not own, that they otherwise make publicly available to viewers, and that the companies themselves collect and use—risks the possible creation of information monopolies that would disserve the public interest.[17]

10 *Id.* at 994, 998.

11 *Id.* at 999-1000.

12 *Id.* at 1001.

13 *LinkedIn Corp. v. HiQ Labs, Inc.*, petition for cert. filed (U.S. Mar. 9, 2020) (No. 19-1116).

14 *Id.* at 1004.

15 *Id.* at 1005.

16 *Id.*

17 *Id.*

Notwithstanding the Ninth Circuit's concern over the possible creation of "information monopolies," it bears mentioning that that when the Ninth Circuit wrote its opinion hiQ had not brought a Sherman Act monopolization or attempted monopolization claim against LinkedIn (although it added those claims in an amended complaint filed after the Ninth Circuit's opinion). In its amended complaint, hiQ alleges that LinkedIn possesses monopoly power in the markets for professional social networking platforms and people analytics.[18] Perhaps that is not surprising. Laying aside whether these are properly defined relevant markets, hiQ faces an uphill climb on these claims because there is no generalized duty to aid competitors.[19] Unilaterally refusing to deal with a potential competitor, without more, does not comprise a Sherman Act monopolization violation. Although courts have recognized refusals to deal as a basis for monopolization claims under certain circumstances, the high-water mark for such claims was 35 years ago when the Supreme Court decided that Aspen Skiing Co. engaged in monopolization when it cut off competitor Aspen Highlands Skiing Corporation from a joint all Aspen ski pass.[20] Since then, courts have been skeptical of such claims and have typically required that the refusal not make economic sense but-for its anticompetitive effect, often evidenced by ending a profitable prior course of dealing.

While hiQ did not initially allege a Sherman Act claim, it did allege that LinkedIn violated the California Unfair Competition Law ("UCL"). The UCL is more forgiving than the Sherman Act (how much so is frequently the subject of argument). The UCL supplied the hook for hiQ's argument that LinkedIn's alleged rationale for banning hiQ was pretextual. As the district court noted, the UCL "is not limited to actual antitrust violations, but also includes conduct that threatens an incipient violation of an antitrust law, or violates the policy or spirit of one of those laws because its effects are comparable to or the same as a violation of the law, or otherwise significantly threatens or harms competition."[21] HiQ alleges that LinkedIn's conduct violates the spirit of the antitrust laws because LinkedIn is unfairly leveraging its power in the professional networking market to secure an anticompetitive advantage

18 Amended Complaint at ¶ 111 (Dkt 131), *hiQ Labs, Inc. v. LinkedIn Corp.*, No. 3:17-cv-3301 EMC (N.D. Cal. Feb. 14, 2020).

19 *Verizon Comm's, Inc. v. Law Offices of Curtis V. Trinko*, 540 U.S. 398, 411 (2004).

20 *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585 (1985).

21 273 F. Supp. 3d at 1117.

in the data analytics market.[22] HiQ also alleges that LinkedIn is unfairly controlling an "essential facility."[23] Neither the monopoly leveraging doctrine nor the essential facilities doctrine have a solid footing at the U.S. Supreme Court, which is perhaps another reason why hiQ did not allege a federal antitrust claim.

III. THE RELATIONSHIP BETWEEN COMPETITION LAW AND PRIVACY LAW

Although both privacy law and competition law share the ultimate goal of protecting consumers, they have different missions. Competition law seeks to ensure that consumers enjoy the benefits of a competitive market — high quality products and services at competitive prices — and that firms who wind up with market power do not extend their power into other markets or use it to exclude competitors. Privacy law, on the other hand, seeks to ensure that consumers have some measure of control over their personal data. The two realms can come into contact in a number of ways. Firms can offer enhanced privacy to distinguish their products and secure a competitive advantage over rivals who offer less protection. In other words, privacy can be a competitive differentiator as an aspect of product quality. Apple, for example, has adopted this strategy, touting its refusal to share its users' data for marketing purposes. LinkedIn, for its part, pledges to its members that it will not rent or sell personal information that members post and, as noted above, informs members that it prohibits automated bots from scraping the site.

Tension between privacy law and competition law arises when a competitor or potential competitor relies on access to consumers' personal information held by a rival. For example, the German competition authority, the Bundeskartellamt, argued that alleged violations of data protection laws by Facebook, which it considers a dominant social network provider, also constituted a violation of German competition law. A German appellate court disagreed, however, holding that merely collecting

22 *Id*. The Second Circuit announced in *Berkey Photo, Inc. v. Eastman Kodak Co*., 603 F.2d 263 (2d Cir. 1979) that "a firm violates § 2 by using its monopoly power in one market to gain competitive advantage in another . . . ." *Id*. at 276. More recently, circuit courts have diminished the monopoly leveraging doctrine as an independent claim under section 2. See, e.g. *In re Microsoft Corp. Antitrust Litig*. 333 F.3d 517 (4th Cir. 2003); *Alaska Airlines, Inc. v. United Airlines, Inc*., 948 F.2d 536 (9th Cir. 1991). The Supreme Court appeared to take a narrow view of monopoly leveraging in *Trinko*, , noting in a footnote that a party can articulate a successful monopoly leveraging claim only by showing a "dangerous probability of success in monopolizing the second market." 540 U.S. at 415 n. 4 (internal quotes and citations omitted).

23 273 F. Supp. 3d at 1117. The Seventh Circuit articulated the four elements of the essential facilities doctrine in *MCI Communications Corp. v. American Telephone and Telegraph Co.*, 708 F.2d 1081, 1132-33 (7th Cir. 1983): "(1) control of the essential facility by a monopolist; (2) a competitor's inability practically or reasonably to duplicate the essential facility; (3) the denial of the use of the facility to a competitor; and (4) the feasibility of providing the facility." *Id*. at 1132-33. In *Trinko* the Supreme Court pointedly noted that it has never adopted the essential facilities doctrine. 540 U.S. at 410-11.

and processing the data of Facebook users does not constitute an abuse of dominance (Europe's version of monopolization) in violation of competition law without harm to actual or potential competitors.

HiQ v. LinkedIn represents another example of this tension playing out in litigation, and we can expect more. As consumers navigate the modern digital economy, they generate vast amounts of data (now measured in zettabytes (10^{21} bytes) annually). Day-by-day computers, smart phones, digital assistants, social media, wearable technology, home appliances, and cars become more interconnected. Meanwhile, dramatic advances in data storage and retrieval, paired with equally dramatic advances in processing power and system architecture, allow computers to solve tasks of extraordinary computational complexity.

This has paved the way for sophisticated and rapidly deployable predictive analytics and artificial intelligence that is more widely available than ever before. This, in turn, opens the door to groundbreaking innovations — new products and services that can improve the lives of millions. At the same time, however, those with access to such data and analytical tools are often privy to disconcertingly accurate insights into how we are likely to act, where we are likely to go, who we are likely to be with, our state of mind, and what we will likely buy and consume. The privacy implications are significant. The implications for market power, the realm of antitrust law, are equally significant. In short, data can be a very valuable resource and the digital economy prospectors that are digging in these mines are frequently discovering rich new veins of data gold.

This presents a legal policy dilemma. Increasing privacy protections by limiting the spread of data can reduce the benefits of competition by denying rivals access to the data they need to compete, simultaneously entrenching incumbents that hold such data (who may already be dominant). Locking down data, in this view, is considered tantamount to raising a barrier to entry or expansion. Conversely, attempting to bolster competition by ensuring that competitive rivals have access to personal data can diminish privacy by sharing data in ways that consumers may not anticipate or want.

In the tug-of-war between privacy and competition, both the district court and court of appeals in *hiQ v. LinkedIn* have come down firmly on the side of competition, at least so far. That may have something to do with the posture of the case (the opinions were in the context of injunction proceedings, and as of the writing of this article LinkedIn has not even responded to the complaint). Crucially, consumers such as LinkedIn members are not directly represented. To be sure, LinkedIn made privacy-based arguments on their members' behalf. But LinkedIn's credibility on member privacy issues was undermined by hiQ's allegations that LinkedIn was just seeking to protect its market power and that the privacy arguments were just a handy alibi. Both the District Court and the Ninth Circuit rested their decision, in part, on LinkedIn's

alleged plans to develop a service competitive to hiQ's (though LinkedIn will obtain users' permission). Given the current heightened sensitivity to digital privacy, however, it is remarkable that both the District Court and Ninth Circuit disregarded the concepts of consumer sovereignty about privacy choices and individual control over their data in their opinions, despite the fact that these principles are wildly popular. According to Pew Research polls, 93 percent of adults say that being in control of who can get information about them is important[24] yet over 8 in 10 say they have very little or no control over the data that companies and the government collects.25 The U.S. Federal Trade Commission has used its authority over unfair and deceptive practices to challenge harmful uses of consumer data that consumers did not agree to or anticipate. These concepts support LinkedIn's argument that it had a business justification for denying hiQ access. When members post their data on LinkedIn's site, LinkedIn states it does not allow it to be scraped by third parties. Users do not anticipate or consent to companies like hiQ secretly analyzing changes to their profiles for purposes of reporting to their employers. Ironically, just months after the Ninth Circuit issued its opinion, California's Consumer Privacy Act (CCPA) took effect.

Although the CCPA was not in effect when hiQ created its service or when it sued LinkedIn, it is now and it directly affects hiQ's activities. Under the CCPA, businesses that collect a consumer's personal information must inform the consumer what information they are collecting and why. To "collect," under the statute, includes "gathering, obtaining, receiving, or accessing any personal information pertaining to a consumer by any means . . . include[ing] receiving information from the consumer, either actively or passively, or by observing the consumer's behavior."[26] The law defines "personal information" in a way that clearly includes the information hiQ collects. Specifically, it includes information that "relates to, describes, is capable of being associated with, or could reasonably be linked, directly or indirectly, with a particular consumer or household" and"[i]nferences drawn . . . to create a profile about a consumer reflecting the consumer's preferences, characteristics, psychological trends . . . predispositions, behavior, attitudes, intelligence, abilities, and aptitudes."[27] Although "personal information" does not include publicly available information, under CCPA, "publicly available" refers only to information that is lawfully made available from federal, state, or local government records, not information that is publicly posted by the consumer on a private site.[28]

24 Mary Madden, Lee Rainie. Pew Research Center, May 20, 2015 "Americans' Attitudes About Privacy, Security and Surveillance." Available at: http://www.pewinternet.org/2015/05/20/americans-attitudes-about-privacy-security-and-surveillance/.

25 Pew Research Center, November 2019, "Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information."

26 California Consumer Privacy Act, Cal. Civ. Code § 1798.140(e).

27 *Id.* §§ 1798.140(o)(1), 1798.140(o)(1)(K).

28 *Id.* §1798.140(o)(2).

The increasing importance of consumer data to competition coupled with the growing protection of such data in privacy law creates numerous dilemmas. Sharing as a competition remedy has traditionally been invoked where data is difficult or expensive to create, raising an entry barrier that keeps out competitors who need access to such data. By contrast, the concern driving privacy law, like the CCPA, is that consumer data has become too widely available, with a perceived loss of consumer control. The remedy adopted for privacy concerns limits collection and restricts sharing of data, except at the consumer's direction, but attempts to provide these protections and stop a rival from accessing data may trigger antitrust liability, at least under the UCL, or liability for interfering with a rival's contracts.

The case between hiQ and LinkedIn will continue, and the advent of the CCPA may yet get the court's attention. Regardless, this case represents an early clash between the goals of antitrust and privacy law and demonstrates that companies that use consumer data need to be alert to possible threats to their business models from both areas of law.

Editors' bios

David S. Evans' academic work has focused on industrial organization, including antitrust economics, with a particular expertise in multisided platforms, digital economy, information technology, and payment systems. He has authored eight books, including two award winners, and more than one hundred articles in these areas. He has developed and taught courses related to antitrust economics, primarily for graduate students, judges and officials, and practitioners, and have authored handbook chapters on various antitrust subjects.

David's expert work has focused on competition policy and regulation. He has served as a testifying or consulting expert on many significant antitrust matters in the United States, European Union, and China. He has also made submissions to, and appearances before, competition and regulatory authorities with respect to mergers and investigations in those and other jurisdictions. David has worked on litigation matters for defendants and plaintiffs, on mergers for merging parties and intervenors, and for and in opposition to competition authorities.

Allan Fels AO graduated in economics (first class honors) and law from the University of Western Australia in 1965. He has a PhD in Economics from Duke University and was a research fellow in the Department of Applied Economics at the University of Cambridge from 1986-1972, where he wrote The British Prices and Incomes Board (Cambridge University Press, 1972).

On his return to Australia Professor Fels joined the Economics Department of Monash University as a Senior Lecturer, before becoming Professor of Administration and Director of the Graduate School of Management from 1984 until 1991.

The career of Professor Fels in Australia falls into two parts. He was generally regarded as the nation's leading regulator, serving as inaugural Chair of the Australian

Competition and Consumer Commission (and its predecessor bodies) from 1989 until 2003. The Australian Competition and Consumer Commission is the country's regulator of competition law and consumer law; it also regulates public utilities in the telecommunications and energy industries (in a similar manner to industry-specific bodies such as Ofcom in the UK and FCC in the US). He has had numerous other regulatory roles (for example, in insurance, agriculture, telecommunications, and aviation).

Professor Fels remains a leading figure globally in competition policy. He co-chaired the OECD Trade and Competition Committee from 1996 to 2003 and continues regularly to be a keynote speaker at major global competition events including the world's two peak events, the International Competition Network Annual Conference and the OECD Global Competition Forum.

He was a participant in the 15-year process of drafting the Chinese Antimonopoly Law 2008 and currently advises the Chinese government on the law's implementation. Academically, he is co-director of the Competition Research Centre at the Chinese Academy of Science, a prestigious position, and an international adviser to the Chinese Academy of Social Science.

The second part of Professor Fels' career has been academic. He was appointed Foundation Dean of the Australia and New Zealand School of Government and served in that position from 2003 until 2012. The predominant activity of the School has been the provision of management development programs to senior public servants in the two countries. There is also a substantial research program and other professional and outreach activities.

Catherine Tucker is the Sloan Distinguished Professor of Management and a Professor of Marketing at MIT Sloan. She is also Chair of the MIT Sloan PhD Program.

Her research interests lie in how technology allows firms to use digital data and machine learning to improve performance, and in the challenges this poses for regulation. Tucker has particular expertise in online advertising, digital health, social media, and electronic privacy. Her research studies the interface between marketing, the economics of technology, and law.

She has received an NSF CAREER Award for her work on digital privacy, the Erin Anderson Award for an Emerging Female Marketing Scholar and Mentor, the Garfield Economic Impact Award for her work on electronic medical records, the Paul E. Green Award for contributions to the practice of Marketing Research, the William F. O'Dell

Award for most significant, long-term contribution to Marketing, and the INFORMS Society for Marketing Science Long Term Impact Award for long-run impact on marketing.

She is a cofounder of the MIT Cryptoeconomics Lab which studies the applications of blockchain and also a co-organizer of the Economics of Artificial Intelligence initiative sponsored by the Alfred P. Sloan Foundation. She has been a Visiting Fellow at All Souls College, Oxford. She has testified to Congress regarding her work on digital privacy and algorithms, and presented her research to the OECD and the ECJ.

Catherine Tucker is coeditor at Quantitative Marketing and Economics, associate editor at Management Science, Marketing Science, and the Journal of Marketing Research and a research associate at the National Bureau of Economic Research. She teaches MIT Sloan's course on Pricing and the EMBA course "Marketing Management for the Senior Executive." She has received the Jamieson Prize for Excellence in Teaching as well as being voted “Teacher of the Year” at MIT Sloan.

She holds a PhD in economics from Stanford University and a BA from the University of Oxford.

Authors' Bios

Reiko Aoki has been Commissioner of the Japan Fair Trade Commission since 2016. She has conducted research and published on the economics of patents, patent pools, standards, innovation and intergenerational political economy in academic positions at the Ohio State University, SUNY Stony Brook, University of Auckland and Hitotsubashi University. She is Professor Emeritus of Hitotsubashi University. She has served as Executive Member of the Council for Science and Technology Policy, Japanese Cabinet Office 2009-2014, Member of the Information and Communication Council 2014-2016 and Member of Science Council of Japan 2014-2016. Prior to joining the JFTC, she was Executive Vice-President (International, Gender Equality, and Intellectual Property) at Kyushu University. She received her B.S. in mathematics from University of Tokyo, M.A. in economics from University of Tsukuba, and PhD in economics and MS in statistics from Stanford University. She is currently President of the Japanese Law and Economic Association, and Executive Board Member of the Japanese Economic Association.

Robert D. Atkinson is founder and president of the Information Technology and Innovation Foundation ("ITIF"), the world's leading think tank for science and technology policy. He is an internationally recognized scholar, a widely published author, and a trusted adviser to policymakers around the world, with expertise in the broad economics of innovation and specific policy and regulatory questions around new and emerging technologies. Rob's most recent book, co-authored with Michael Lind, is Big Is Beautiful: Debunking the Myth of Small Business.

Before founding ITIF, Atkinson was Vice President of the Progressive Policy Institute and Director of PPI's Technology & New Economy Project. He received his Masters in Urban and Regional Planning from the University of Oregon and was named a distinguished alumnus in 2014. He received his Ph.D. in City and Regional Planning from the University of North Carolina at Chapel Hill in 1989.

Simon Bishop is co-founder and Partner at RBB Economics. He has over 20 years' experience of providing expert economic advice in competition law matters and has advised on several hundred cases before competition authorities and courts around the world. Clients for whom Simon has acted as lead economist on several occasions include GE, British Airways, FA Premier League, Bertelsmann, Sony, and BHP Billiton.

Simon has published widely including reports and articles on market definition, non-horizontal mergers, bidding markets, loyalty rebates and vertical restraints. He is the co-author of The Economics of EC Competition Law (3rd edition, Sweet & Maxwell, 2009), a leading textbook on the application of economics to European competition law, and is co-editor of the European Competition Journal.

Aleksandra Boutin is a Founding Partner of Positive Competition. She is featured in the Who's Who Legal: Thought Leaders - Competition, a ranking listing the world's leading competition professionals. She has more than fifteen years of experience in competition policy as an enforcer, consultant and academic. She is a member of the Scientific Council of the GCLC and a Non-Governmental Advisor for Poland in the ICN.

Aleksandra advises clients on a wide range of competition issues in the context of competition proceedings in front of the European Commission, National Competition Authorities and Courts. Her recent experiences involve cartel overcharge analysis, vertical and horizontal mergers, exclusionary and exploitative abuses, state aid and information exchanges. She has also advised clients in antitrust cases involving digital platforms in e-commerce and in the software industry.

On the policy front, she was the lead author of the European Commission's Guidelines on Horizontal Cooperation Agreements and Block Exemption Regulations, she participated in preparing the communication of the Commission on quantifying harm in antitrust damage actions and in the Commission's IP Guidelines.

Aleksandra holds a Master in Theoretical Economics and Econometrics from Toulouse School of Economics, and a Master in European Law and Economic Analysis from the College of Europe. She completed her PhD studies at the Université Libre de Bruxelles.

Xavier Boutin is a founding partner at Positive Competition and an adjunct professor of economics at the Université libre de Bruxelles. He holds a PhD in Economics from EHESS (Paris School of Economics). He is featured in the Who's Who Legal Thought Leader: Competition, a ranking listing the world's leading competition professionals. Xavier is also a founding and board member of l'Entente, the association of French speaking antitrust practitioners in Brussels.

Xavier leads a team of consultants advising clients in the context of merger, State Aid and antitrust proceedings in front of the European Commission and national competition authorities. Prior to founding Positive Competition, Xavier was an expert in an international consultancy. Before joining the private sector, he spent

almost eight years in the Chief Economist Team of the European Commission's DG Competition.

Xavier made a major contribution to the EU Commission's Article 102 guidance paper, its Article 101 horizontal guidelines and the accompanying Block Exemption Regulation ("BER"). He also contributed to the State Aid Modernization, in particular, in the areas of R&D&I and Regional Aid.

Xavier's most recent work includes the assessment of vertical and horizontal mergers. In addition, Xavier has led many investigations involving exclusionary and exploitative abuses in the digital platform sector. These include the assessment of vertical restraints and self-preferencing in e-commerce, as well as Article 102 cases in the software industry.

Burcu Can graduated from Ankara University, Faculty of Law in 2008. Over five years of her close to 10 years of career in competition law was devoted to the Turkish Competition Authority as a competition expert case handler. Burcu has obtained her LL.M. degree from Harvard Law School and worked for many years at the Brussels office of one of the top international law firms as a competition lawyer. During her years at the Turkish Competition Authority, Burcu took part in leading antitrust and merger cases concerning banking, finance, motor vehicle and transportation sectors, contributed to the preparation of secondary legislation for competition law and several International Competition Network projects. In addition to her LL.M. degree from Harvard Law School, Burcu also has a master's degree in commercial law from Gazi University in Turkey. Burcu is a member of the New York Bar and the Istanbul Bar.

Sayanti Chakrabarti is the Joint Director in the Economics Division of the Competition Commission of India, where she is responsible for carrying out economic analysis of antitrust and merger cases. She has also contributed to several research outputs of the Division on competition law and policy. Prior to joining the CCI in 2010, Sayanti worked with the Economic Affairs Team of the Federation of Indian Chambers of Commerce and Industry, where she contributed to a number of surveys and studies on issues of importance to the Indian business and economy. She holds an MSc in Economics from Calcutta University.

Naval Satarawala Chopra is a partner at Shardul Amarchand Mangaldas and has been practicing competition law since its inception in India. He is the first Indian lawyer in GCR's top "40 under 40" competition lawyers in the world (2015);

listed as a global "thought leader" (Who'sWhoLegal); and recognized regularly as a leading advisor in Chambers & Partners.

Naval has been involved in some of the most prominent abuse of dominance cases in India. He is particularly skilled in advising on antitrust aspects of technology related matters, having successfully defended WhatsApp in relation to its privacy policy and separately digital payments services, Microsoft Corporation in relation to software licensing terms and Uber in relation alleged predatory pricing, before the Competition Commission of India ("CCI").

Naval has recently advised Facebook in its acquisition of minority shareholding in India's fastest growing telecom company. He has also advised in Avago's acquisition of Broadcom, Ctrip's investment in MakeMyTrip, the failed merger of Publicis and Omnicom as well as the conditional approval for Bayer AG's acquisition of Monsanto Company.

Naval also advises a number of clients in cartel cases and is involved in challenges on account of due process and natural justice issues before the Supreme Court of India.

David S. Evans' academic work has focused on industrial organization, including antitrust economics, with a particular expertise in multisided platforms, digital economy, information technology, and payment systems. He has authored eight books, including two award winners, and more than one hundred articles in these areas. He has developed and taught courses related to antitrust economics, primarily for graduate students, judges and officials, and practitioners, and have authored handbook chapters on various antitrust subjects.

David's expert work has focused on competition policy and regulation. He has served as a testifying or consulting expert on many significant antitrust matters in the United States, European Union, and China. He has also made submissions to, and appearances before, competition and regulatory authorities with respect to mergers and investigations in those and other jurisdictions. David has worked on litigation matters for defendants and plaintiffs, on mergers for merging parties and intervenors, and for and in opposition to competition authorities.

Máté Fodor is an Economist at Positive Competition. Prior to joining the company, he was an assistant professor of Econometrics and Game Theory at the International School of Economics, a University of London affiliate institution. Máté holds a MSc. in Economics from Trinity College Dublin, where he was the recipient of the Terrence Gorman Prize for valedictorian. After consulting missions for the

public sector authorities, he joined ECARES at the Université libre de Bruxelles to obtain his PhD in Economics. He has secured research funding from several prestigious grants, such as the Marie Curie Framework and FNRS. His research profile is diverse with peer-reviewed publications in political economy, labor, energy, development, and media economics.

Since joining Positive Competition, Máté has worked on abuse of dominance cases involving digital platforms in the e-commerce and software industries. Máté has also been involved in overcharge and damages estimations in the construction and primary resources industries. He has also contributed to the economic assessment of mergers.

Gönenç Gürkaynak is a founding partner of ELIG Gürkaynak Attorneys-at-Law, a leading law firm of 90 lawyers based in Istanbul, Turkey. Mr. Gürkaynak graduated from Ankara University, Faculty of Law in 1997, and was called to the Istanbul Bar in 1998. Mr. Gürkaynak received his LL.M. degree from Harvard Law School in 2001, and is qualified to practice in Istanbul, New York, Brussels, and England and Wales. Before founding ELIG Gürkaynak Attorneys-at-Law in 2005, Mr. Gürkaynak worked as an attorney at the Istanbul, New York, and Brussels offices of a global law firm for more than eight years of his total of 23 years of career in private practice so far. Mr. Gürkaynak heads the competition law and regulatory department of ELIG Gürkaynak Attorneys-at-Law, which currently consists of 45 lawyers. He has unparalleled experience in Turkish competition law counselling issues with more than 23 years of competition law experience, starting with the establishment of the Turkish Competition Authority. Mr. Gürkaynak frequently speaks at local and international conferences and symposia on competition law matters. He has published more than 200 articles in English and Turkish by various international and local publishers, and he has published three books. Mr. Gürkaynak also holds teaching positions at undergraduate and graduate levels at two universities, and gives lectures in other universities.

Peter K. Huston is a partner in the San Francisco office of Baker Botts. He has 30 years of experience in high-stakes civil and criminal antitrust litigation, trials, government investigations, class actions and merger clearance work, both in and out of government. In 2020 he was recognized in the 27th Edition of Best Lawyers in America. Prior to joining Baker Botts, Peter served as Assistant Chief in the San Francisco Office of the Antitrust Division of the United States Department of Justice where he led and supervised both criminal price-fixing matters and civil merger matters. For his government service, Peter was awarded the Attorney General's Distinguished Service Award and was twice awarded the Antitrust Division's Award of Distinction. He also received the California Lawyer Attorney of the Year Award in 2013

and was named to the Daily Journal Top 100 Lawyers in 2012. Peter currently serves on the Executive Committee of the California Lawyers Association Antitrust, Unfair Competition and Privacy Law Section and the ABA International Cartel Task Force.

Tetsuya Kanda has been a Senior Planning Officer in Legal System Planning Division, Consumer Affairs Agency ("CAA") of Japan, since July 2019. In the current capacity, he is in charge of an initiative to reinforce the Whistleblower Protection Act.

Prior to the current position, he held various positions in the Japan Fair Trade Commission ("JFTC"), in both fields of investigation and policymaking. Mostly recently, he was a Senior Planning Officer for Investigation from 2017 to 2019, where he dealt with procedural and substantive issues of investigations against major technology firms. His past responsibility in the JFTC includes drafting of law amendments strengthening public enforcement of the Japanese Antimonopoly Act and its "monopoly" guidelines.

He was seconded to the Directorate-General for Competition of the European Commission from 2012 to 2013.

He holds a Master of Public Policy from the University of Michigan and a Bachelor of Laws from the University of Tokyo. He also teaches the Japanese competition law at the Graduate School of Law, Meiji University in Tokyo.

Joe Kennedy is a senior fellow at ITIF. For almost 30 years he has worked as an attorney and economist on a wide variety of public policy issues. His previous positions include chief economist with the U.S. Department of Commerce and general counsel for the U.S. Senate Permanent Subcommittee on Investigations. He is president of Kennedy Research, LLC, and the author of Ending Poverty: Changing Behavior, Guaranteeing Income, and Transforming Government (Rowman & Littlefield, 2008). Kennedy has a law degree and a master's degree in agricultural and applied economics from the University of Minnesota and a Ph.D. in economics from George Washington University.

Maria Khan is a Research Associate in the Economics Division of the Competition Commission of India. She has over five years of work experience in the field of Competition Law and Policy. She is responsible for carrying out economic assessment of antitrust conduct cases and mergers and acquisitions, competition advocacy and research related to competition law and policy. Maria is an Economist

by qualification and holds an M.Phil. in Economics degree from Jawaharlal Nehru University, New Delhi and a Post Graduate degree in Economics from Jamia Millia Islamia, New Delhi.

Thomas Kramler is head of the unit dealing with e-Commerce and the data economy in the European Commission's Directorate General for Competition. Before that, he was Head of the Digital Single Market Task Force responsible for the e-commerce sector inquiry. Mr. Kramler holds a law degree and a PhD from the University of Vienna, Austria. He has graduated with a Master's degree in European Community Law from the College of Europe (Bruges).

Previously Mr. Kramler was deputy head of the unit responsible for antitrust cases in the information industries, internet and consumer electronics sectors. Before joining the European Commission, Mr. Kramler worked as agent representing the Austrian government before the European Courts in Luxemburg.

Andrew Low is a senior lawyer in Gilbert + Tobin's competition and regulation group. Andrew's practice is directed to providing complex advice and advocacy for clients in complex and high-profile matters across each core area of the Competition and Consumer Act (including complex merger clearance, enforcement investigations, industry inquiries, and dispute resolution).

Andrew has a particular expertise and interest in, and has contributed significant thought leadership to, digital issues for competition policy and regulation. This includes chairing sessions including with the ACCC Chairman and international experts Maurice Stucke and Ariel Ezrachi on reflections on the Digital Platforms Inquiry and whether Robots Can Collude?. He has authored a number of papers including Decoding the Data Lifecycle, ACCC signals a changing approach to digital M&A, Digital Reform unfolds, and Impact of competition policy on data access and management, and the soon to be published Digital Competition Australia 2021 (Lexology/GTDT). He has spoken at the Law Council of Australia's Rising Stars 2019 Conference on digital competition policy.

Such thought leadership is supported by in-depth commercial experience advising large tech companies. He is widely recognised by key clients as a rising star competition lawyer and is sought after by clients for his digital economy expertise.

Payal Malik is Adviser, Economics and Head of the Economics Division at the Competition Commission of India. She is on secondment from PGDAV College,

University of Delhi, where she is an Associate Professor of Economics. Her areas of expertise are competition law, policy and regulation. She has several years of research and economic consulting experience in network Industries such as power and telecommunication, ICTs, Innovation systems, and Infrastructure.

Her research and professional collaborations have been with NCAER, Delhi, OECD, Orbicom, IDEI, University of Toulouse, University Of Québec at Montreal, CEPR, JRC, European Commission, IPTS Seville, ICEGEC, Hungary, Department of Information Technology, TRAI, Ministry of Power, Ministry of Information and Broadcasting, Planning Commission of India, CSO, India, WSP-SA, World Bank and AFD, Paris. She was on the team that drafted the Electricity Act of India ushering competition into the sector.

She has a BA (Hons.) in Economics from Lady Shri Ram College, University of Delhi and an MA and MPhil in Economics from the Delhi School of Economics. She also has an MBA in finance from University of Cincinnati, Ohio.

Vinicius Marques de Carvalho is Partner at VMCA Advogados and Professor of Commercial Law at the University of São Paulo. He holds a PhD in Commercial Law from the University of São Paulo and a PhD from the University Paris I (Pantheon-Sorbonne) in Public Comparative Law. He was a Yale Greenberg World Fellow (2016), President of the Administrative Council for Economic Defense ("CADE") (2012-2016), Vice-President of the International Competition Network (2013-2016), Secretary of Economic Law (2011-2012) and Commissioner at CADE (2008-2011).

Marcela Mattiuzzo is Partner at VMCA Advogados and PhD Candidate in Commercial Law at the University of São Paulo. She holds a Masters in Constitutional Law from the same institution and was Visiting Researcher at Yale Law School. She was Advisor and Chief of Staff at the Office of the President at the Administrative Council for Economic Defense ("CADE"), Commissioner at the Federal Fund for the Defense of Collective Rights and CADE's representative before the National Strategy for the Fight Against Corruption and Money Laundering.

Andreas Mundt has been President of the Bundeskartellamt since 2009, member of the Bureau of the OECD Competition Committee since 2010 and the Steering Group Chair of the International Competition Network since 2013.

After qualifying as a lawyer, Andreas Mundt entered the Federal Ministry of Economics in 1991. In 1993 he joined the staff of the Free Democratic Party in the

German Parliament. In 2000 he joined the Bundeskartellamt as rapporteur and later acted as Head of the International Unit and Director of General Policy.

Maureen K. Ohlhausen chairs the antitrust group at Baker Botts LLP, where she focuses on competition, privacy and regulatory issues and frequently represents clients in the tech, life sciences, energy, and retail industries. She served as Acting FTC Chairman from January 2017 to May 2018 and as a Commissioner starting in 2012. She directed all FTC competition and consumer protection work, with a particular emphasis on privacy and technology issues. Ms. Ohlhausen has published dozens of articles on antitrust, privacy, regulation, FTC litigation, and telecommunications law issues and has testified over a dozen times before Congress. She has received numerous awards, including the FTC's Robert Pitofsky Lifetime Achievement Award. Prior to serving as a Commissioner, Ms. Ohlhausen led the FTC's Internet Access Task Force and headed the FTC practice group at a leading communications law firm. Ms. Ohlhausen clerked at the U.S. Court of Appeals for the D.C. Circuit and received her J.D. with distinction from the George Mason University School of Law and her B.A. with honors from the University of Virginia.

Dr. Burton Ong, LLB (NUS); LLM (Harv); BCL/DPhil (Oxon) is an Associate Professor at the Faculty of Law, National University of Singapore ("NUS"), where he teaches and researches in the fields of competition law, intellectual property and contract law. He is an Advocate and Solicitor of the Supreme Court of Singapore, as well as an Attorney and Counsellor-at-Law in New York State. He is a member of the Ministry of Trade and Industry's Competition Appeal Board, an IP Adjudicator with the Intellectual Property Office of Singapore and sits on the dispute resolution panel of the Casino Regulatory Authority. He is a Director (Competition Law) at the EW Barker Centre for Law and Business at the National University of Singapore. He is the editor of "The Regionalisation of Competition Law and Policy Within the ASEAN Economic Community" (2018), published by Cambridge University Press.

Alejandra Palacios, Chair of Mexico's Federal Economic Competition Commission (Comisión Federal de Competencia Económica; "COFECE") is the first woman to head the Mexican antitrust authority. Following a major constitutional reform that set forth a new framework for competition in Mexico, Alejandra was appointed by Congress in 2013 to head the COFECE. She was reelected in 2017 for a second four-year tenure that will end in September 2021.

Before her current role at COFECE, Alejandra worked as Project Director at the Mexican Institute of Competitiveness (the Instituto Mexicano para la Competitividad; "IMCO") for research projects focused on economic regulation, telecom, public procurement and other issues related to competition.

Since June 2016, she is Vice-President for the International Competition Network ("ICN"), the most prominent international network on competition, composed of 138 competition authorities around the world, and as of 2017, Member of the Bureau of the Competition Committee of the Organisation for Economic Cooperation and Development ("OECD"). Alejandra is also a member of the International Women's Forum, Mexico chapter. In 2019 the Women@Competition organization included her in its list of "40 in their 40s" as one of the 40 most notable women in competition in the Americas, Asia and Europe.

Alejandra holds a bachelor's degree in Economics, as well as an MBA from the Instituto Tecnológico Autónomo de México ("ITAM"). She completed a second master's degree in public policy at the Centro de Investigación y Docencia Económicas ("CIDE").

Her academic work includes teaching as well as serving as the Academic Coordinator for the ITAM Economics faculty.

Aman Singh Sethi is a Principal Associate at Shardul Amarchand Mangaldas. He has a diverse work experience, and has been closely involved on matters pertaining to anti-competitive agreements and abuse of dominance before the CCI, the National Company Law Appellate Tribunal as well as the Supreme Court of India. He has also been involved in a number of challenges seeking due process and the preservation of natural justice rights for clients against the CCI before the High Court of Delhi.

Aman has worked for several clients in the high-tech/disruptive industry, agrochemicals and agricultural traits, cement, petrochemicals, and telecommunication sectors in contentious cases. He also writes, and advises clients, on issues related to the interplay of competition law and intellectual property.

Along with co-authors Naval Satarawala Chopra and Yaman Verma, he successfully represented Matrimony.com in an abuse of dominance case against Google. Aman has also represented Uber and Indian hospitality disruptor OYO in wins against abuse of dominance claims before the CCI.

George Siolis joined the Melbourne office as a Partner when RBB Economics was established in Australia in 2009, and since then he has advised clients on

a number of contentious mergers before the ACCC as well as a variety of behavioral matters involving the alleged misuse of market power. He is a member of the Consumer and Competition Committee of the Business Law Section of the Australian Law Council and is listed in Who's Who Legal of Competition Lawyers and Economists. George has worked as a micro-economist for 20 years. Prior to joining RBB Economics George worked with Telstra and was an economic consultant based in the UK for eight years where he developed and led the communications practice at Europe Economics.

Celestine Song is an Assistant Director at the Competition and Consumer Commission of Singapore, where she leads teams working across a wide range of competition enforcement, policy formulation, outreach and advocacy work, including providing competition advice to government agencies. Prior to joining CCCS in 2014, Celestine worked on manpower and productivity policy formulation matters in the Ministry of Manpower. Celestine holds a bachelor's degree in Economics from the Nanyang Technological University of Singapore and a masters' degree in Public Policy from Peking University.

Hi-Lin Tan is the director of the policy and markets division and a member of the senior management at the Competition and Consumer Commission of Singapore, where he is involved in engaging and advising other government agencies on competition matters, and conducting market studies, investigations, and other competition law enforcement activities. Among the cases he has supervised include a market study on online travel booking, and abuse of dominance investigations into online food delivery and payment terminals.

Prior to joining CCCS in 2007, he was a teaching fellow at Boston College, a trading member of the Singapore Exchange, and an economist at the Monetary Authority of Singapore. He holds a PhD in economics from Boston College and master's and bachelor's degrees from the London School of Economics.

Sinem Ugur is a senior associate at ELIG Gürkaynak Attorneys-at-Law. She graduated from Istanbul Commerce University, Faculty of Law in 2011. She is admitted to the Istanbul Bar and has experience close to 10 years in competition law in a variety of industries. She provides legal consultancy to global and domestic clients in all areas of competition law including vertical agreements, abuse of dominance, cartel cases, concentrations, joint ventures, and compliance programs. Sinem Ugur has co-authored numerous articles relating to competition law and international trade matters in English and Turkish. She is also fluent in German.

Yaman Verma is a Partner at Shardul Amarchand Mangaldas with over 10 years' experience practicing competition law. He is recognized as a "future leader" (Who'sWhoLegal, 2017-20); a "rising star" (Competition/Antitrust, Expert Guides, 2018-20) and included in the list of "next generation lawyers" for India (Legal 500, 2017-20).

Yaman has successfully defended WhatsApp against abuse of dominance allegations in relation to its privacy policy, Microsoft Corporation against allegations of unfair and discriminatory software licensing terms, and e-tailer Flipkart against allegations of preferential treatment and discrimination.

Yaman has recently advised on Facebook's acquisition of minority shareholding in India's fastest growing telecom company. Previously, he helped obtain unconditional approvals for Vodafone India's merger with Idea Cellular Limited, the capital alliance between Suzuki Motor Corporation and Toyota Motor Corporation, the Fiat/Peugeot merger, Walmart's acquisition of Flipkart (and successfully defended the approval in follow on litigation), and Microsoft's acquisition of Nokia's mobile telephony business. He has also advised on obtaining conditional approvals for several major global transactions, including Dow/DuPont, Agrium/PotashCorp, and Linde/Praxair.

Yaman has represented Globecast Asia in their leniency application before the Commission, and was successful in obtaining a 100 percent reduction in penalty for Globecast and its officials. He advises several trade associations in relation to compliance with competition laws.

Beth Webster is Director of the Centre for Transformative Innovation at Swinburne University of Technology. She is also Pro Vice-Chancellor for Research Impact and Policy. Her expertise centers on the economics of the way knowledge is created and diffused through the economy. She has a PhD in economics from the University of Cambridge and an M.Ec and B.Ec (hons) from Monash University. She is a fellow of the Academy of Social Sciences Australia.

Professor Webster is responsible for providing advice and leadership on policies relating to the economic and social impact of research, public industry and innovation policies. She is also responsible for measuring university research engagement and impact.

Professor Webster has authored over 100 articles on the economics of innovation and firm performance and has been published in RAND Journal of Economics, Review of Economics and Statistics, Oxford Economic Papers, Journal of Law & Economics, the Journal of International Economics and Research Policy. She has been appointed to a number of committees including the Bracks' review of the automotive

industry, Lomax-Smith Base funding Review, CEDA Advisory Council, and the Advisory Council for Intellectual Property. She is a past President of the European Policy for Intellectual Property Association and is the current General Secretary of the Asia Pacific Innovation Network.

Luke Woodward heads Gilbert + Tobin's Competition and Regulation group, advising and representing clients on competition and consumer law investigations and prosecutions, ACCC acquisition and merger clearances and infrastructure regulation, including in the digital, telecommunications, gas, electricity, water, airports, sea ports and rail industries in Australia.

He has over 30 years competition and consumer law enforcement experience, both on the enforcement side with the former Trade Practices Commission ("TPC") and Australian Competition and Consumer Commission ("ACCC"), and in private practice. Prior to joining the firm in 2000, Luke held senior positions at the ACCC as General Counsel, Executive General Manager, Compliance Division (responsible for enforcement) and Senior Assistant Commissioner, responsible for mergers and asset sales.

Luke was awarded "Competition Lawyer of the Year" in Best Lawyers 2021 and is recognized as "the ultimate strategist" by a client who notes: "He knows the law, knows the ACCC inside and out and knows the best way to approach a matter from a strategic perspective; it's a real value-add." (Chambers Asia-Pacific 2020).

THE EVOLUTION OF ANTITRUST IN THE DIGITAL ERA:
Essays on Competition Policy

Volume One

Editors
David S. Evans
Allan Fels AO
Catherine Tucker

This collection of essays represents the first in a series of two volumes that set out to reflect the state of the art of antitrust thinking in digital markets in jurisdictions around the world. The issues it tackles are many: the role of innovation, the conundrum of big data, the evolution of media markets, and the question of whether existing antitrust tools are sufficient to deal with the challenges of digital markets. Each author tackles the overarching themes from their unique national perspective. The resulting tapestry reflects the challenges and opportunities presented by the modern digital era, viewed through the lens of competition enforcement.

CPI COMPETITION POLICY INTERNATIONAL