Competition in Digital Advertising Markets

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Competition in digital advertising markets

Please cite this publication as:

OECD (2020), *Competition in digital advertising markets,*
http://www.oecd.org/daf/competition/competition-in-digital-advertising-markets-2020.pdf

Foreword

Digital advertising is now the leading form of advertising in most, if not all, OECD countries, and offers businesses the ability to reach individual consumers in ways that could only have been imagined previously. Increased Internet coverage and mobile phone penetration has fundamentally changed the ability of advertisers to reach a broad range of consumers at almost any time of the day and in any context through digital advertising. In addition, developments in artificial intelligence (AI) and machine learning, coupled with the stores of personal data available online, have allowed for cost-effective targeted advertising at scale. Such advertising is traded electronically in real time across a complex supply chain involving numerous actors.

Digital advertising is increasingly the business model of choice in the digital economy, with many businesses providing zero-priced services in exchange for access to consumer data to fuel the sale of targeted digital advertising. Competition agencies are increasingly concerned about competition in digital advertising markets, with a number of recent market studies highlighting a range of potential competition concerns. In particular, there appears to be increasing market concentration, consolidation and integration across many levels of the supply chain. Some consolidation may be somewhat expected given economies of scale in these markets. However, some commentators have questioned whether previous mergers may have exacerbated this, and a number of competition authorities are currently investigating whether some players have maintained dominance by behaving contrary to competition laws. To address these issues, a number of jurisdictions are considering whether competition laws need to be better enforced, or whether new tools or regulation are required.

The aim of this paper is to provide an overview of how digital advertising markets work, to look at the state of competition in these markets, and to identify what responses various jurisdictions are considering to address competition concerns in these markets.

This paper was prepared by Anna Barker of the OECD Competition Division. The document benefitted from comments from Antonio Capobianco, Chris Pike, Renato Ferrandi and Matteo Giangaspero (all of the OECD Competition Division), as well as comments from the Secretariat to the Committee on Consumer Policy. It was prepared as background material for the virtual meeting of the Competition Committee's Working Party 2, on 30 November 2020, www.oecd.org/daf/competition/competition-in-digital-advertising-markets.htm.

Table of contents

FIGURES

TABLES

1 Introduction

Advertising has been around as long as commerce itself. Advertising can play an important role in markets by improving information flows and addressing information asymmetries to alert consumers to new products or deals. Over history, technological changes have brought new ways of reaching consumers. With the rise of the Internet and the widespread adoption of smartphones, digital advertising has quickly become the leading form of advertising in many OECD countries today. Digital advertising is big business. Despite the current economic downturn caused by the COVID-19 pandemic, digital advertising is still expected to grow by 2.4% over the year, to reach USD 332.84 billion globally, representing more than half of total advertising expenditure globally (forecast to reach USD 614 billion in 2020) (Cramer-Flood, 2020[1]). This follows many years of double digit growth (Cramer-Flood, 2020[1]).

Digital advertising has fundamentally changed the way in which businesses reach consumers. Stores of consumer data are used to tailor advertising that is bought and sold in the fraction of a second in which an Internet page loads. Digital advertising is increasingly the business model of choice to fund a range of so-called zero-price services in the digital economy. These multi-sided markets bring together multiple parties including platforms, content providers, consumers and advertisers.

However, recent concerns regarding increasing vertical integration, market power, conflicts of interest and a lack of transparency, have led a number of competition agencies to initiate market studies to better understand these complex markets. In addition, there have been a number of high profile merger and enforcement cases across or affecting digital advertising markets in multiple OECD jurisdictions.

The aim of this background note is to support discussion at the Competition Committee's Working Party 2 roundtable on digital advertising markets on 30 November 2020. In particular, this note and the roundtable will aim to unpack the key competition policy issues involving digital advertising markets. The remainder of Chapter 1 provides an overview of previous OECD work on the topic, followed by an outline of the structure of the note.

1.1. Relevant OECD work

This paper builds on work already undertaken by the Competition Committee, as well as work by the OECD's Committee on Consumer Policy.

A number of Competition Committee roundtables have touched on issues relevant to digital advertising markets. Most recently, in June 2020, the OECD held a roundtable on consumer data rights and competition (OECD, 2020[2]). Among other things, this discussed the role of consumer data in digital markets and the competition affects associated with access to consumer data, including in digital advertising markets (OECD, 2020[3]).

Digital advertising was also relevant to roundtables held in 2018 on quality considerations in the zero-price economy (held jointly with the Committee on Consumer Policy) (OECD, 2018[4]); non-price effects of mergers (OECD, 2018[5]), and; implications of e-commerce for competition policy (OECD, 2018[6]). In particular, as digital advertising is a key channel for monetising so called zero-price digital services, the

quality of such services can be influenced by the quality and amount of digital advertising offered by these businesses.

Further, in June 2017, the Competition Committee held a roundtable on rethinking the use of traditional antitrust enforcement tools in multi-sided markets (OECD, 2017[7]). This is relevant to the way that competition authorities undertake competition assessments in digital advertising markets, which are multi-sided markets, as discussed more in Section 4.1.

The OECD's Committee on Consumer Policy has also undertaken work relevant to digital advertising markets. In particular, one of the six sections in the *Recommendation on consumer protection in e-commerce* is on "fair business, advertising and marketing practices" (OECD, 2016[8]). Further, in 2019 it published a report identifying trends, benefits and risks of online advertising (OECD, 2019[9]), followed by a good practice guide on online advertising for businesses (OECD, 2019[10]). It also released a good practice guide on consumer data in 2019 (OECD, 2019[11]).

1.2. Structure of the paper

The purpose of this paper is to bring together the current literature to:

- Explain briefly how digital advertising has emerged, and introduce the various types of digital advertising (Chapter 2).
- Provide an overview of the "ad tech stack", including the digital advertising supply chain and electronic trading of digital ads (Chapter 3).
- Consider the state of competition, and potential competition issues in digital advertising markets, including a discussion of market structure and conduct, as well as key merger and enforcement cases (Chapter 4).
- Discuss potential approaches to address the competition concerns in digital advertising markets (Chapter 5).

Chapter 6 then provides some conclusions.

2 What is digital advertising?

The purpose of this chapter is to provide an introduction to digital advertising. In particular, Section 2.1 provides a brief overview of the history of advertising, before highlighting some of ways in which digital advertising differs from other forms of advertising. In particular, it notes how technological changes brought by the Internet, broad adoption of smartphones, and the ability to track consumer behaviour online, facilitates the targeted digital advertising we see today. Section 2.2 then outlines some of the key forms of digital advertising, including search advertising and digital display advertising.

2.1. What is different about digital advertising?

Advertising has been around for hundreds of, if not thousands, of years (Marketing Mind, n.d.[12]). Newspaper ads started being published in the 1600s, with billboard ads following in the early 1800s, and direct mail advertising starting in the late 1800s (Quick, 2020[13]; Marketing Mind, n.d.[12]). Over the ages, advertising revenue has become a key way to fund a number of business activities, including, notably, newspapers and magazines. When radios and televisions entered people's homes in the early to mid-1900s, this was the start of a new "golden age" of advertising which peaked in the 1960s to 1980s. Again, advertising was the business model of choice to pay for content (see also Section 4.1). At the same time, market research emerged as a new way to understand consumers and to tailor advertising to their various wants and needs. With the emergence of the Internet, a new wave of digital advertising began from the mid-1990s. This only accelerated with the emergence of mobile telephones and then, smartphones, as discussed in greater detail below. Today, digital advertising is the leading form of advertising in most if not all OECD countries, having overtaken television advertising expenditure within the last five years (OECD, 2019[9]).

Like preceding forms of advertising, many consumers do not like digital advertising, and distrust of digital advertising is quite high compared with other forms of advertising (Choozle, 2017[14]; MarketingSherpa, 2016[15]; Olenski, 2016[16]; KPMG, 2016[17]; NewsMediaWorks, 2017[18]; Rakuten Marketing, 2017[19]). This is something that publishers and advertisers have to manage as too much advertising could ultimately drive consumers away. That said, some consumers do appreciate that digital advertising can connect them with new brands, discounts and other offers (PwC, 2017[20]; Choozle, 2017[14]; Rakuten Marketing, 2017[19]), and many appreciate that digital advertising funds many of the products available at zero price in the digital economy (see Section 4.1). Digital advertising also has benefits for advertisers in that it allows them to target their ads to the right audience, and better measure the success of their digital advertising campaigns (Tucker, 2018[21]).

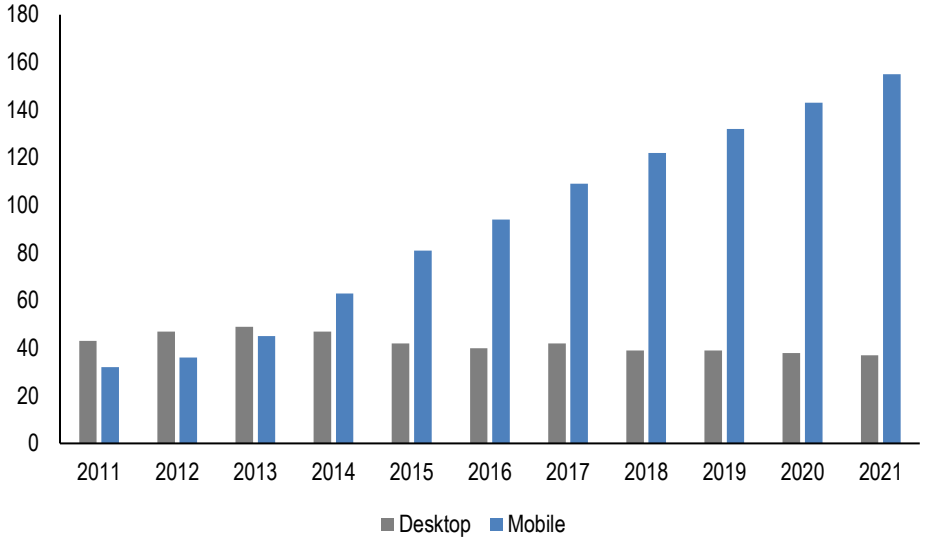
2.1.1. Internet and mobile penetration increase access to individual consumers

Consumers across the OECD are more connected than ever before (OECD, 2017[22]). Worldwide, it is forecast that people will spend an average of three hours a day online in 2020, with the substantial majority of that time being on mobile devices (see Figure 1). Time on the Internet has overtaken time spent on traditional media channels in many countries. This is largely driven by growth in the use of Internet-

connected mobile devices, with mobile searches outstripping desktop searches in the last few years (Heitzman, 2017[23]).

Figure 1. People are spending more time online on mobile phones, but less on desktops

Number of minutes spent on the internet per day, per capita worldwide, by device



Source: Clement (2020[24]).

Traditional avenues for reaching consumers (especially younger consumers) are becoming less relevant and are being replaced by digital channels. Recent growth in global advertising revenue has been largely driven by double digit growth in digital advertising, save for the current year in which growth has slowed due to the economic downturn (Letang and Stillman, 2016[25]). Starting from 2017, global expenditure on digital advertising has outstripped television advertising expenditure each year (Slefo, 2017[26]). Further, digital advertising is increasingly a key revenue source for many digital businesses.[1]

The omnipresence of the Internet and smartphones has fundamentally changed the way that consumers search for and purchase goods and services, both on and offline (OECD, 2019[9]). Consumers now tend to consult multiple information sources prior to making a purchase. For example, many consumers read online reviews (Heitzman, 2017[23]), and social media now has a strong influence on purchasing behaviour (Heitzman, 2017[23]; PwC, 2017[27]), as do bloggers and "social influencers" (Rakuten Marketing, 2017[19]).

The Internet also allows for new ways in which to present text, images, video and audio, and provides for interactive and individually tailored advertising in a way that no other medium has before, using the vast amounts of personal data collected online (OECD, 2019[9]). In addition, the reach of digital advertising is potentially much wider, especially for mobile advertising, which can reach consumers at almost any time of the day and in almost any context. However, compared to the "golden era" of advertising, audience attention is now much more fragmented, making it difficult for businesses to reach a broad audience through one advertisement. For example, decades ago, advertising on prime time television was guaranteed to reach a broad audience, whereas today's consumers split their attention and time across a range of media (Marketing Mind, n.d.[12]).

2.1.2. Technological advances allow for targeted advertising to be traded in real time

One of the main advantages of digital advertising is the potential to personalise advertising at scale, in real time. This has been referred to as Online Behavioural Advertising (OBA), online profiling, and behavioural targeting. Boerman et al. (2017, p. 364[28]) define OBA as *"the practice of monitoring people's online behavior and using the collected information to show people individually targeted advertisements"*. The types of information that are being used in OBA include age, gender, location (in real time), education level, interests, political pursuasions, sexual preferences, online shopping behaviour, and search history (Boerman, Kruikemeier and Zuiderveen Borgesius, 2017[28]). The quantities of consumer data being collected online are vast.[2]

OBA relies on the tracking of consumer behaviour online. Traditionally, "cookies" (essentially a bit of digital code that records certain user behaviour) were used to track online behaviour via desktop browsers. Cookies can be first-party or third-party. First-party cookies originate from (or are sent to) the website the consumer is currently viewing, whereas third-party cookies originate from (or are sent to) an unrelated website (Beal, 2008[29]). Cookies are less effective at tracking online activity on mobile devices as they are not necessarily shared between mobile apps and some mobile browsers block third-party cookies by default (IAB, 2013[30]).

Further, as consumers now tend to use a range of devices to access online services, businesses are using other means to track individuals online. These methods are often categorised at "deterministic" or "probabilistic". Deterministic methods use consumer-identifying characteristics, such as log-ins, to track consumers across devices (FTC, 2017[31]). Probabilistic methods instead infer a consumer's identity through means such as IP address, geolocation information, browser or device fingerprinting, and general usage patterns (Boerman, Kruikemeier and Zuiderveen Borgesius, 2017[28]; Shakeel, 2016[32]; Whitener, 2015[33]; Ghosh and Scott, 2018[34]; FTC, 2017[31]). US Federal Trade Commission (FTC) staff found that when accessing 100 popular websites on two devices: at least 87 used cross-device tracking; 96 allowed consumers to submit a username or email address; and 16 shared user names or emails with third-parties (FTC, 2017[31]).

In addition, businesses are increasingly using tracking pixels to facilitate third-party tracking. Pixels are small (essentially invisible) graphics that embed a piece of code that is loaded when a user visits a webpage or opens an email. Pixels facilitate tracking by registering certain actions and noting these in the server's log files (Ryte, 2019[35]).

Tracking technologies allow for highly detailed profiles to be developed about individual consumers. This can have several uses for digital advertising. First, it can be used to target (and retarget) ads.[3] Second, it can be used to track how users interact with ads, which can be used to determine the effectiveness of advertising campaigns. Third, tracking of consumer reactions can be important for advertising payments that are related to specific user outcomes, such as "clicks", webpage visits, or purchases, for example. Tracking technologies tend to make use of Artificial Intelligence (AI) and machine learning (Box 1). The tracking of consumers online, and gathering of consumer data, may be influenced by the overarching privacy laws in the relevant jurisdiction. In addition, consumer consent regarding such tracking may be influenced by the default settings of businesses regarding things like the use of cookies.

These technological developments have also powered the rise of "programmatic advertising" (see Section 3.3). Programmatic advertising involves:

> *… automated decision-making, where dedicated software and complex algorithms fueled by various categories of user data (behavioural, demographic, etc.) are used to sell and purchase ad inventory within fragments of a second, avoiding "human" negotiation between publishers and advertisers. (Geradin and Katsifis, 2019, p. 7[36])*

Part of OBA's desirability comes from the fact that programmatic advertising allows advertisers to know who is looking at the webpage, what their interests are, and to bid on that ad space in real time. That is, OBA is partly so sought after precisely because it can be applied in real time, through the use of programmatic advertising. This represents a shift away from a focus on the content to a focus on the user, which is a significant change when compared with other forms of advertising (Geradin and Katsifis, 2019[36]).

Box 1. Artificial intelligence and machine learning in digital advertising

According to the OECD's *AI Principles*:

> *An AI system is a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments. It does so by utilising machine and/or human-based inputs to: i) perceive real and/or virtual environments; ii) abstract such perceptions into models through analysis in an automated manner e.g. with machine learning, or manually; and iii) use model inference to formulate options for information or action. AI systems are designed to operate with varying levels of autonomy.*

More generally, AI is the broad science of machines attempting to mimic human abilities, using AI systems. AI systems can then use a number of methods to implement AI, of which machine learning is one. Specifically, machine learning *"uses methods from neural networks, statistics, operations research and physics to find hidden insights in data without being explicitly programmed where to look or what to conclude"* (Thompson, Li and Bolen, 2020[37]). Other AI facilitating methods include neural networks, deep learning, computer vision, and natural language processing.

AI can facilitate better personalisation of online advertising. Chow (2017[38]) notes:

> *A big part of the opportunity for marketers is how AI will help us fully realize personalization—and relevance—at scale … scale, combined with customization possible through AI, means we'll soon be able to tailor campaigns to consumer intent in the moment. It will be like having a million planners in your pocket.*

For example, AI can allow for a variety of ad components (e.g. background, images, text etc.) to be dynamically assembled in real time according to the audience (through a process called "dynamic creative optimisation").

Machine learning can also be used to determine the likely success of a digital ad. This has significant implications for user experience and advertising revenue (Ling et al., 2017[39]):

> *Accurate estimation of the click-through rate (CTR) in sponsored ads significantly impacts the user search experience and businesses' revenue, even 0.1% of accuracy improvement would yield greater earnings in the hundreds of millions of dollars.*

Machine learning can also facilitate A/B testing, which allows marketers to test which form of ad is most effective by running multiple versions over a testing period. In addition, machine learning is being used to run the bidding auctions underlying the purchase of digital advertising (see Section 3.3).

Sources: Adapted from OECD (2019[9]), and referencing OECD (2019[40]); Thompson, Li and Bolen (2020[37]); Chow (2017[38]); Levine (2016[41]); Ling et al., (2017[39]).

2.2. Types of digital advertising

There are a number of different forms of digital advertising. While there are different ways to classify these, three of the main forms include search advertising, display advertising and online video advertising, each of which are explained below. In addition, content providers and social media platforms offer new forms of search advertising, such as native advertising and user-generated ads, including "influencer" advertising. These are also discussed below.

Digital ads appear on both desktop and mobile devices, though advertisers may choose to target one particular medium, and there may be slight differences in how the ads are presented on the various mediums. Digital advertising is now a major source of revenue for many businesses in the digital economy, especially those that provide services at zero price (see Section 4.1).

2.2.1. Search advertising

Consumers often use Internet search engines to navigate their way around the Internet.[4] In addition, a number of platforms offer more specific Internet search services, for example, for travel, accommodation, or shopping.[5] Search engines can be a common starting point for consumers looking to make an online (or indeed, offline) purchase (OECD, 2019[9]). Search terms entered by a consumer can also provide clues as their interests more generally. For this reason, search advertising, which allows advertisers to pay to have their listings included or prioritised among the results returned in response to a consumer's search query, can provide advertisers with direct access to consumers exactly when they are looking to make a purchase. Hence, search advertising is one of the most successful forms of advertising in terms of "conversions" (that is, purchases made as a result of the ad) (Geradin and Katsifis, 2019[36]). This is why search advertising has traditionally been (and remains) such a popular form of digital advertising. Indeed, before the tools and data required for targeted advertising became commonplace, search advertising was the dominant form of digital advertising (OECD, 2019[9]). Most online search engines use results pages that contain a mixture of both organic and paid search results.[6]

Search advertising generally works with the aid of keywords that are selected by the advertiser, potentially with assistance from the search advertising platform. The order of paid search results (or search ads) is generally influenced by a number of factors. For Google Ads, for example, each time a search query is entered (Google, 2015[42]; WordStream, n.d.[43]; Google, n.d.[44]; Google, n.d.[45]; Google, n.d.[46]):

- Google determines which ads match the search term. It ignores any that aren't eligible, like ads that target a different country or are disapproved based on a policy violation.
- Google then uses each ad's estimated "Ad Rank" to determine which ads are eligible, and then the order of ads. The Ad Rank is determined by Google according to both:
  - The advertiser's bid price, that is, the bid submitted by the advertiser on the auction (see Section 3.3), which is a cost per click or "CPC" in that the advertiser only pays Google each time a user clicks on the ad link.[7]
  - The advertiser's "Quality Score", which is a metric of between 1 and 10 that is calculated by Google based on, among other things, the expected click through rate (i.e. the likelihood that a user will click on the advertisement), the ad relevance (i.e. the relevance of the ad to the search terms entered), and the landing page experience (e.g. whether the page linked to the ad has relevant and original content, is easy to navigate and is transparent).
- Google selects the ad with the highest Ad Rank, and displays (or "serves") this ad.

This is all determined in the time it takes to load the search result page (Google, n.d.[47]).

2.2.2. Digital display advertising

Digital display advertising is the term used to describe the advertising "boxes" on websites, apps or platforms that appear along the top of a screen as a "banner ad", or elsewhere on the screen (for example as "native advertising" or promoted content – see Box 2). Content can include text, images or videos. Spending on digital display advertising surpassed spending on search advertising in the US in 2016 (eMarketer, 2016[48]). However, despite its popularity, display advertising achieves low click-through rates compared to search advertising, with estimates for 2020 being as low as 0.05% (O'Brien, 2015[49]; Chaffey, 2020[50]). That said, digital display advertising is seen as being important to advertisers in terms of building "brand awareness" among consumers (Geradin and Katsifis, 2019[36]).

Box 2. Native advertising and promoted content

The US Federal Trade Commission (FTC) has defined native advertising as "content that bears a similarity to the news, feature articles, product reviews, entertainment, and other material that surrounds it online" (FTC, 2015[51]). Native advertising is growing in popularity given its reputation as a more effective way of engaging with consumers (Sharethrough, 2015[52]). It is estimated that, by 2021, native advertising revenue in the US will make up 74% of display advertising revenue, up from 56% in 2016; accounting for some USD 21 billion in 2018 (Munda, 2017[53]).

Native advertising is generally more difficult for consumers to identify as advertising compared to other forms of advertising. This is because such ads *"often resemble the design, style, and functionality of the media in which they are disseminated [and] may appear on a page next to non-advertising content"* (FTC, 2015[51]).

Native advertising can occur on any website but it is commonly used on social media platforms and on news and other media and content sites.

Source: Adapted from OECD (2019[9]), and referencing FTC (2015[54]); Sharethrough (2015[52]); Munda (2017[53]); O'Brien (2015[49]); FTC (2016[55]).

An increasingly popular form of digital display advertising is digital video advertising, which is sold and purchased in the same way as other digital display advertising. New forms of display advertising continue to be developed. For example, new frontiers in digital advertising include digital screens on bus stations, shopping malls, and billboards that change in real time (Match2One, 2020[56]).

Pricing for digital display advertising can be fixed-rate or auction-based, and can be billed in a number of ways. Fees can based on the number of: ads posted, or thousand "impressions", called "cost per mile" (CPM); "viewable" impressions (vCPM) (i.e. where 50% of the ad can be seen for at least one second), which overcomes the problem that 56% of all ads are not seen (Google, 2014[57]); clicks, called "cost per click" (CPC); acquisition or act, called "cost per act" (CPA), and; views, called "cost per view" (CPV), for video ads. Auction based sales are generally facilitated with "programmatic advertising", that is, the algorithmic purchase and sale of advertising space through auctions that occur in real time, usually through real time bidding (see Section 3.3).

Data concerning the identity of the consumer visiting a website is particularly important for targeting digital display advertising, which cannot rely on user inputs in the same way as search advertising (Scott Morton and Dinielli, 2020[58]). This reliance on consumer data has implications for consumer privacy and security. Numerous surveys have shown that consumers value privacy and are increasingly concerned about their privacy online (Cisco, 2019[59]; Auxier et al., 2019[60]; RSA, 2019[61]; Turow et al., 2009[62]; KPMG, 2016[17]; Gomez, Pinnick and Soltani, 2009[63]). Consumers are also concerned about personal data being used to

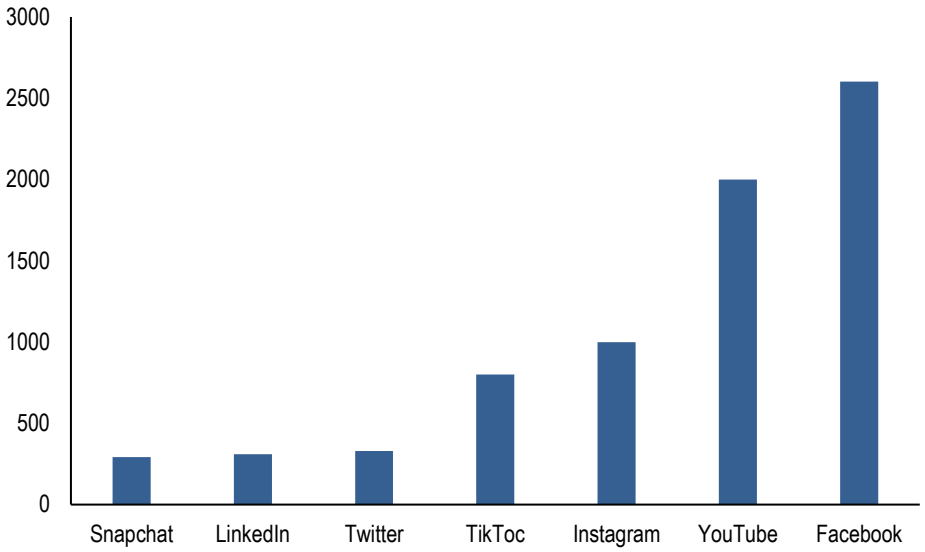
tailor digital advertising. For example, over 53% of consumers across the European Union in 2015 were concerned about their online activities being monitored for the purpose of personalised advertising (European Commission, 2015[64]). Further, 80% of American social network users surveyed in 2014 were concerned about third parties like advertisers or businesses accessing the data they share on these sites, and 64% believed the government should do more to regulate digital advertisers (Madden, 2014[65]). Despite these concerns, consumers tend to go along with default privacy settings which may lead them to disclose and share more personal information than intended (Calo, 2014[66]). However, the relationship between consumer views around privacy, and their actions online, are complex, as discussed in previous OECD reports (OECD, 2020[3]; OECD, 2018[4]).

Social media advertising

Almost one in every two people globally are forecast to use social media networks in 2020 (or 3 725 billion people), up from one in three people in 2017 (eMarketer, 2018[67]; Chaffey, 2020[68]; We Are Social and Hootsuite, 2019[69]). With almost all users accessing social networks from a mobile device, the increase in usage has largely been driven by an increase in mobile phone adoption and network coverage (We Are Social and Hootsuite, 2019[69]). Advertising on social media is increasingly being used to reach particular target audiences, building on the rich data sets amassed by these platforms (both in terms of the personal data provided by a user and the data provided by other users in their network). Some of the biggest social media platforms at the moment in OECD countries include Facebook, Instagram, Twitter Snapchat and LinkedIn (see Figure 2).[8] Each of these networks offer online advertising services.

Figure 2. Monthly users on a selection of major social network platforms

Millions of users, globally



Note: Based on the latest available information for each: 2018 for Instagram; 2020 for Facebook and TikTok; 2019 for all others. Note that at least half of all TikTok users (some 400 million) are in based China, where the platform is called Douyin.
Sources: Clement (2019[70]; 2019[71]; 2020[72]); Facebook (2020[73]); Iqbal (2020[74]); We Are Social and Hootsuite (2019[69]).

Online social networks offer various forms of online advertising including:

- Easily identifiable digital display ads (also called “segregated ads”), which tend to appear to the left or right of the user’s feed.
- “Native” or “in-stream” ads, which appear in the same form as other content in the user’s news feed but that are in fact paid advertising (see Box 2).
- “Influencer” ads, which are user-generated ads or endorsements from social media users that have a large social media following and hence can “influence” consumer trends. Influencer ads, being user-generated, will appear in the feeds of users that follow the influencer and hence, can be difficult to identify as advertising if the influencer does not clearly disclose the commercial nature of the post (OECD, 2019[9]).

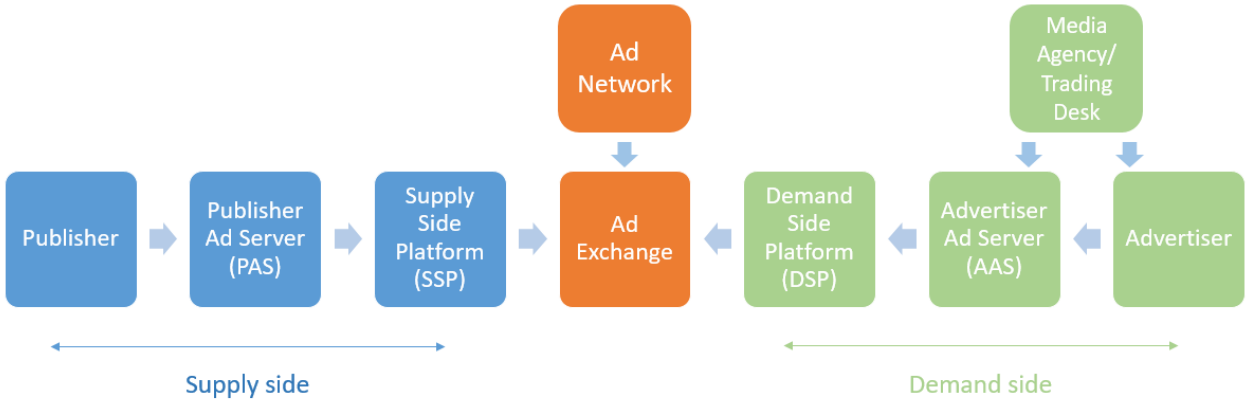
3 The ad tech stack

The purpose of this chapter is to provide background on the "ad tech stack". Namely, the digital advertising supply chain, and the electronic trading of digital advertising, which is largely facilitated through auctions.

The digital advertising supply chain has become increasingly complex. In traditional forms of media advertising, the supply chain was usually straightforward and might have been as simple as the advertiser going directly to a publisher (perhaps via an advertising agency). In the early days of digital advertising, the supply chain was much the same: publishers would engage in direct bilateral negotiations with advertisers to sell ad space at a given price (Geradin and Katsifis, 2019[36]). In the 26 years since the world's first digital display ad (Lafrance, 2017[75]), the digital advertising supply chain has grown in complexity and can now involve many services (many of which are facilitated with technology) and players. Further, there is often a lack of transparency, especially for smaller advertisers and publishers, around who (and indeed, what) is involved.

At its most basic, digital advertising involves a publisher of content (e.g. a newspaper or website) that supplies advertising space (otherwise known as ad inventory) on the **supply side** of the market, and an advertiser of products or services on the **demand side** of the market, both of which (generally) use intermediaries to trade on an advertising exchange. This simplified supply chain is shown in Figure 3.1, and discussed below. Ultimately, the supply chain connects advertisers with consumers (via publishers).

Figure 3. Simplified "ad tech stack"



Sources: Adapted from CMA (2020[76]); Scott Morton and Dinielli (2020[58]); Srinivasan (2019[77]).

In practice, what generally happens is that:

1. A consumer arrives on a publisher's site.
2. The page contacts its PAS, to display what ads are already bought.
3. For remaining ad inventory, a bid request is sent to the SSP.

4. The SSP auctions off the inventory through an ad exchange, in which demand-side platforms (including those associated with ad networks) bid for the inventory (see Section 3.3).
5. The winning bidder sends its ad to the PAS (through its advertiser ad server – see below).
6. The PAS serves the ad to the consumer on the publisher's site (Montgomery, 2019[78]; Srinivasan, 2019[77]).

Intermediaries, including ad exchanges (see Section 3.3), take a cut of any amount paid by an advertiser to acquire the ad space from the publisher. The publisher receives the "traffic acquisition cost", which is the price that is paid by an intermediary to the publisher (Scott Morton and Dinielli, 2020[58]).

The electronic trading of digital advertising (so called "programmatic advertising"), which occurs in the middle of the supply chain and is facilitated by ad exchanges, is discussed in more detail in Section 3.3.

3.1. Supply side of the market

The supply side of the market comprises the suppliers of advertising space, being publishers, and the intermediaries that provide services to publishers to help them sell that space.

3.1.1. Publishers

Publishers include any online platform, website or app that wishes to sell space for digital advertising (also called ad inventory). As discussed in Chapter 2, these can include Internet search engines (including specialised search services), news media sites, social media platforms, video hosting platforms, apps, GPS navigators and other content sites.

Larger publishers, for example, Facebook and Google (for Internet search and YouTube), as well as some of the larger news media sites, can sell their ad inventory directly to advertisers. The CMA (2020[76]) calls these publishers "owned and operated platforms". The more sophisticated of these publishers operate self-service interfaces for programmatic trading (see Section 3.3).

Smaller publishers can sell their advertising space in one of two ways, they can:

1. Sell inventory through an ad network. Ad networks connect publishers with advertisers by aggregating publisher inventory and packaging it based on context or audience (see Box 3). Ad networks can sell inventory directly, through exchanges, or both. They are responsible for processing the exchange between the publisher and the advertiser and for serving the ad directly on the publisher's website, and can be tailored towards serving publishers or advertisers (see also Section 3.3).[9]
2. Sell inventory via ad tech intermediaries, enabling advertisers to bid directly in auctions, as discussed in more detail below (CMA, 2020[76]).

Apart from deciding how to access advertisers, attracting desirable content (or offering a desirable service) is also of key importance to publishers. In particular, this is what attracts consumers, which is ultimately what will attract advertisers on the other side of the market.

3.1.2. Intermediaries

Intermediaries on the supply side of the market include supply side platforms (also called sell-side platforms) and publisher ad servers. Where a publisher does not use an ad network, it will have to obtain both of these services (which may be provided by one firm, as in the case of Google Ad Manager, for example):

- **Supply side platforms (SSPs)** are platforms that provide the technology to automate the selling of publishers' ad inventory. Publishers can use numerous SSPs, and in some cases SSPs are vertically integrated and also provide PAS services and even exchange services by connecting directly with Demand Side Platforms (see Section 3.3 below).[10]
- **Publisher ad servers (PAS)** provide the technology to manage, store, prepare, and "serve" (i.e. display) ads on a publisher's website. This allows a publisher to dedicate space on its site to ads, which are displayed in real time from the ad server when a page loads.[11] A publisher may host its own PAS or use a third-party hosted PAS. Publishers tend to use one PAS, or one PAS per site.[12]

In addition, or alternatively, a publisher may choose to use **header bidding technologies** to send ad requests to, and receive bids from, multiple SSPs simultaneously (see Section 3.3.2 below for more on header bidding).

Box 3. Digital ad networks

Digital ad networks connect advertisers with websites and other digital content providers (e.g. apps) that want to host online advertising (i.e. publishers). There are many digital ad networks.

Ad networks may specialise by concentrating on a particular type of consumer, device, quality of service, or network of publishers. For example, Apple's "Search Ads" provides access to advertising space in the Apple app store. In comparison, the Facebook Audience Network offers advertisers access to Facebook and Instagram and a large range of third-party apps and websites. Similarly, Google's Display Network includes over 2 million websites, videos and apps, both within and outside of its business, and reaches over 90 % of Internet users worldwide. Other advertising networks may specialise by offering advertising in specific markets such as travel or beauty, for example.

From an advertiser's perspective, there will be a number of factors to consider in choosing which advertising network to use. These may include network reach (i.e. the number of sites and apps they would be able to access and the amount of traffic these sites and apps get, as well as whether the ad network offers search advertising, display advertising or both); the ability to target ads to a particular audience; price and type of payment; reputation and trustworthiness; ease of use, and what other services are offered by the ad network.

From a publisher's perspective, trustworthiness and reputation are likely to be relevant considerations, as will payment amount and type.

Source: Adapted from OECD (2019[9]), including information from Google (2020[79]).

3.2. Demand side of the market

The demand side of the market comprises advertisers, and the intermediaries that provide services to advertisers.

3.2.1. Advertisers

Advertisers include any businesses that promote their products through digital advertising, either to raise brand awareness, or more directly increase sales. Advertisers generally have some idea about the audience they want to reach, and so targeted digital advertising provides this facility. Advertisers can either

buy directly from an ad network (see Box 3), such as one of the large platforms' self-service interfaces, or use other intermediaries to help them buy ad inventory, as discussed below (CMA, 2020[76]).

For **smaller advertisers**, the process usually involves the business setting an advertising budget, defining its bid parameters (for example, a bid ceiling), and then requesting an **ad network** to bid and buy ad space on its behalf.[13] In comparison, **larger advertisers** may choose to use **intermediaries** to buy inventory on an ad exchange, and to display their ads, as outlined below (they may also make direct deals with publishers).

3.2.2. Intermediaries

When advertisers use an ad network, they are provided a bundled service. This includes demand side platform services, such as bidding and data analytics which help to identify the value of a given ad space or a user eyeball to the advertiser. They also include "advertiser ad serving services", which ensure the delivery of an ad onto a publisher's website (or app). Alternatively, an advertiser may choose to obtain these services directly from separate parties:

- **Demand-side platforms (DSPs)** manage the purchase of ad inventory from publishers via an ad exchange, including bidding on the exchange on behalf of the advertiser, and providing data analytics services.[14]
- **Advertiser ad servers (AAS)** provide technology services for the storage, tracking, and delivery (i.e. serving) of ads onto a publisher's site on behalf of the advertiser. That is, they provide services to help advertisers manage their ad campaigns.[15]

Advertisers may also use **Data Management Platforms (DMPs)**, which are software platforms that collect, analyse and manage first and third-party data in order to identify audience segments for the purposes of targeted advertising.[16] DMPs are usually linked to a DSP to provide integrated services to advertisers. Other services provided to advertisers, potentially by ad networks or other providers, such as **Media Agencies**, include pre-bid targeting services (to evaluate the quality of a publisher before bidding), in-house trading services, and ad blocking services (to block ad delivery if there are concerns about view-ability, brand safety or fraud) (OECD, 2019[9]).

3.3. Ad exchanges and programmatic advertising

At the middle of the ad tech stack are the "ad exchanges". Ad exchanges are fully automated digital marketplaces where advertising space is bought and sold in what is known as programmatic advertising (Srinivasan, 2019[77]; Geradin and Katsifis, 2019[36]).[17] Many ad exchanges today are integrated with SSPs.

Electronic trading of ads started with the launch of the RMX advertising exchange in 2005. In 2007, Yahoo! acquired the exchange for USD 680 million, and by 2009, the exchange was processing 9 billion ad spaces each day (Srinivasan, 2019[77]). Google's advertising exchange, now the largest in most OECD countries, today processes some tens of billions of ad spaces daily (Srinivasan, 2019[77]).

Programmatic advertising is now the predominant form of digital display advertising in many OECD countries including, for example, Canada, France, Germany, the United Kingdom, and the United States, it is also the predominant form of digital display advertising in China (Fisher, 2019[80]) – see Table 1.

Programmatic advertising covers a range of buying models (Zawadziński, n.d.[87]), including:

- Real Time Bidding (RTB), which is an auction-based bidding protocol in which advertisers compete against each other to display ads to specific users.

- Private Market Place (PMP), which is an "invite only" version of RTB. It is an auction process in which a handful of advertisers bid against one another to buy a publisher's inventory. These advertisers can reserve their ads before the publisher offers them in an RTB marketplace.
- Programmatic direct, a one-to-one media-buying process in which the price is not usually set via a programmatic auction, but programmatic technology is responsible for serving the ad in real time.

Programmatic advertising offers a range of benefits such as *"greater liquidity, better return-on-investment metrics, more precise ad targeting and lower transaction costs"* (U.S. House of Representatives, 2020, p. 130[88]). However, there are also concerns about opacity in programmatic advertising, as discussed in more detail in Section 4.2.

Table 1. Programmatic advertising was the leading form of digital display advertising in 2019

Within this, mobile programmatic digital display advertising comprised the lion's share

	Percentage of total digital display ad spend that is programmatic	Spend on programmatic digital display advertising (USD, billions)	Spend on mobile programmatic display* (USD, billions)
Canada	86.4%	3.02	2.01
China	77.8%	31.35	27.36
France	86.0%	1.99	1.18
Germany	80.0%	2.76	1.95
United Kingdom	93.6%	7.74	6.24
United States	83.5%	57.30	46.86

Sources: Briggs (2019[81]); Cheung (2019[82]); von Abrams (2019[83]); von Abrams (2019[84]); Fisher (2019[85]); Fisher (2019[86]).
Notes: * This is a subcategory within total spend on programmatic digital display advertising.

3.3.1. Important prerequisites for participating in the auction

Programmatic advertising happens in the time it takes to load a webpage; some 300-400 milliseconds – literally, in the blink of an eye (Geradin and Katsifis, 2019[36]). Given the speeds involved, and the (at least perceived) importance of being able to target advertising (see Chapter 2), access to information, speed and the routing of buy and sell orders (i.e. being one of the exchanges that is able to bid on advertising space) are all key to ensuring that electronic trading of advertising is competitive (Srinivasan, 2019[77]):

- **Information:** The information required to bid on an ad space includes the size of the ad space (in pixels), the page address, and information about the identity of the consumer. Information on the identity of the consumer is particularly important for digital display advertising; advertisers bid up to 50% less when such information is missing (Johnson, Shriver and Du, 2017[89]; Ravichandran and Korula, 2019[90]).
- **Speed:** Auction bidding occurs in the milliseconds in which a webpage loads and exchanges often limit the time in which DSPs can bid, sometimes to as little as 100 or 160 milliseconds (Srinivasan, 2019[77]). Hence, any speed advantage, such as that achieved through co-location of trading computers and exchange computers, may create a competitive advantage.
- **Access to the auction:** Exchanges need equal access to the auction. If an intermediary preferentially routes buy and sell orders to a particular exchange, this could distort competition.

These issues are discussed in more detail in Section 4.2. The various rules that have governed programmatic advertising over time are discussed briefly below.

3.3.2. Auction rules

There have been multiple changes to the way that the programmatic auctions of the various exchanges have worked over time. These have concerned the order in which exchanges can bid, the number of exchanges that can compete at once in real time, and whether auctions are "first-price" or "second-price". This is discussed briefly below. The auction rules are relevant to competition outcomes as auction rules that give preference to certain players, or create opportunities for arbitrage, could affect market outcomes to the extent that there is not sufficient competition to address any such issues (e.g. through competing exchanges offering different auction rules). That is, if there are concerns about competition in digital advertising markets, auction rules that distort competition could be problematic.

Early days

In the early days of programmatic advertising, the order in which exchanges could bid depended on the historical prices bid by the various exchanges. Exchanges were thus prioritised in a "waterfall" whereby the highest ranking exchange would be invited to bid, and the next ranked exchange would only be invited to bid if the first passed, and so on (Geradin and Katsifis, 2019[36]). Over time, the auction has become more dynamic and has moved towards all exchanges being able to bid in real time at the same time. However, in the interim, some auctions were only dynamic for certain players, which potentially gave those players an advantage.[18] In particular, it would allow those exchanges to bid in real time against other exchanges' historical averages, which arguably gave a particular advantage for higher value inventory.

Header bidding

The introduction of "header bidding" in 2014 provided a way for publishers to circumvent any ordering of exchanges by facilitating a real time auction between exchanges (that chose to participate in header bidding) on the publisher's browser. Publishers benefitted through 40-70% higher revenues than under the partially dynamic auctions that header bidding competed with (Levine, 2015[91]). Hence, adoption was quick, with 70% of major publishers in the United States adopting it in 2016, and 80% of news publishers using it by 2018 (Srinivasan, 2019[77]).

Header bidding also brought greater publisher control over bidding times, which are often limited to 100 to 160 milliseconds by ad exchanges, and gave publishers the ability to understand the impact of changing these bidding times on revenues (Srinivasan, 2019[77]). In particular, to understand whether bidding times are binding, and whether increasing the time could increase prices (as more exchanges could compete in the auction). Advertisers also had the potential to benefit by being able to bid on a broader range of ad inventory.

The main downside of ("client-side") header bidding is page latency – that is, pages loading more slowly. This can be addressed by hosting the auction on a remote server (called "server-side" header bidding), but this solution is less popular as it tends to result in lower revenues as less consumer data is shared under this method and bids tend to be lower in the absence of consumer data (Geradin and Katsifis, 2019[92]).

Moves towards more open auctions

Header bidding encouraged ad exchanges to move towards greater real time bidding, with some ad exchanges offering their own versions of server side header bidding.[19] While this meant more ad exchanges could compete in real time, some ad servers, through their integration with DSPs, were able to bid after other ad exchanges had bid, allowing them an informational advantage.[20] That is, they were able to choose whether or not to bid after seeing what price the auction would otherwise clear for.

Hosting an ad exchange and DSP on the same server also has the potential to offer speed and data advantages to those parties. Data advantages come from the fact that consumer data is not necessarily interoperable between different intermediaries. In many cases ad exchanges have since moved towards more open auctions where all exchanges are able to compete at the same time, though in some cases the publisher is charged for inviting additional exchanges to compete in the auction, and data interoperability remains an issue for some exchanges.[21]

Second-price versus first-price auctions

Over time, there have also been changes to whether auctions are second-price or first-price. In second-price auctions, the highest bidder wins, but only has to pay whatever is needed to just outbid the second highest bidder. In comparison, in first-price auctions, the highest bidder wins, and has to pay whatever they bid. The type of auction can affect market outcomes and has particular implications for bidding strategies of advertisers. To the extent that there is sequential bidding with second-price auctions, as could occur under some of the auction processes previously employed by some intermediaries, some commentators have noted that this created (at least a theoretical) potential for arbitrage.[22] While arbitrage itself is not necessarily problematic, it could be more of a concern if there is a lack of effective competition along the supply chain which could potentially lead to margin squeeze.

4 Competition in digital advertising markets

This chapter looks at the state of competition in digital advertising markets. First, it looks at the relevant economic models and evidence regarding market structure (Section 4.1). It then looks at potential concerns around market conduct (Section 4.2). Both sections draw on the relevant literature, including market studies that have been undertaken by competition authorities (see Box 4). Section 4.3 then provides an overview of some of the competition cases that have considered competition in digital advertising markets.

4.1. Competitive dynamics

This section looks at the nature of competition in the digital advertising markets.

4.1.1. The business model in "attention markets"

A number of articles talk about the growing use of "attention markets" in the digital economy, or even the "attention economy" (Evans, 2020[98]; Prat, 2019[99]; Wu, 2017[100]; Newman, 2020[101]). Evans (2020, p. 1[98]) defines attention markets as involving *"competition in which platforms acquire time from consumers, with bundles of content and ads, and sell ads to marketers to deliver messages during that time."* Indeed, many digital publishers now rely on digital advertising as their main source of revenue (Scott Morton and Dinielli, 2020[58]). As noted by Lear (2019, p. i[97]):

> *… a large number of digital products and services are offered free of charge to consumers and paid for with advertising dollars within so-called "markets for attention". Attention is a scarce resource typically monetized through advertising. Advertisers are willing to pay more for "exclusive" eyeballs than for those that can be reached through multiple means. This means that platforms (i.e. content providers) not only care about the size of their audiences but also about their composition …*

In many cases, digital businesses, including digital platforms and apps, started by offering a product at zero price to consumers. Perhaps to attract the greatest number of users to achieve scale. The revenue model for these businesses often came later, with many opting to sell advertising space once they had a sizable user base. In this way, such businesses generally act as multi-sided markets, with consumers on one side, and advertisers on the other, and content potentially on another side. The multi-sided nature of these markets has implications for market structure and other market outcomes, as discussed below. While advertising is one of the main revenue sources for funding online content and other digital services, there are other revenue models available as outlined in Box 5.

In general, consumers can benefit from the many zero-price digital services that are funded from advertising revenues. Many consumers use these services on a daily basis for a variety of educational, social, informational, and entertainment purposes. Studies have found that many consumers appreciate

that advertising means that many apps are provided for free (Choozle, 2017[14]) and understand that such free services come at a cost in terms of the provision of personal information (Madden, 2014[65]).

Box 4. Market studies on digital advertising markets

Australia

In 2019, the Australian Competition and Consumer Commission (ACCC) released its Digital Platforms Inquiry, which looked at the "impact of digital platforms on consumers and businesses using platforms to advertise to and reach customers, and news media businesses that also use the platforms to disseminate their content". It found that Google has substantial market power in search advertising, and Facebook has substantial market power in display advertising. It also identified potential competition concerns regarding self-preferencing, consolidation and vertical integration (including through acquisitions). To address these issues, it recommended changes to merger law and notifications, search engine and mobile browser defaults, and data portability. It also recommended an inquiry into the supply of ad tech services and advertising agencies, which commenced in February 2020, and is due to conclude in August 2021. To address imbalances between media publishers and dominant platforms, it recommended a code of conduct, and greater enforcement of copyright law. It also recommended reforms to privacy regulation. The Australian government broadly supported the recommendations and established a Digital Platforms Branch (within the ACCC) to implement the recommendations that relate to competition and consumer protection (see Chapter 5).

France

In March 2018, the Autorité de la concurrence published the findings of its sector-specific investigation into online advertising. It found that Google and Facebook are the two main players in digital advertising, and benefit from significant data and consumer reach advantages. It also found several instances of potentially anticompetitive conduct, including bundling and tying practices, exclusivities, leveraging, discriminatory treatment, blocking interoperability, and restricting competitor's from accessing data.

Germany

In 2018, the Bundeskartellamt released a study on online advertising as part of a series of papers on competition and consumer protection in the digital economy. The study provided an overview of online advertising including its historic development, categories of online advertising, and value. It then outlined potential competition concerns including a lack of transparency, self-preferencing and barriers to competitor's accessing data. It also highlighted the dominance of Google and Facebook.

United Kingdom

The Competition and Markets Authority (CMA) launched a market study on online platforms and digital advertising in July 2019, with the final report published in July 2020. In it, the CMA found significant competition problems exist in digital advertising markets, especially regarding Google and Facebook's significant market power and incumbency advantages from network effects, economies of scale and unmatchable access to user data. Rather than tackling these concerns through competition law enforcement, it recommended a new regulatory approach to be overseen by a Digital Markets Unit (DMU) (see Chapter 5).

Sources: ACCC (2019[93]); ACCC (2019[94]) ; Autorité de la concurrence (2018[95]); Bundeskartellamt (2018[96]); Lear (2019[97]); CMA (2020[76]).

That said, some have argued that consumers are currently missing out on the full value of the data they offer to advertisers as part of this exchange, and that consumers may be more available to advertisers if they were properly compensated for their time and data (Posner and Weyl, 2018[102]). Given the huge profitability of the largest sellers of digital advertising, and the persistence of this profitability, it could be argued that platforms are holding onto a large proportion of the value that they generate. In terms of time, Evans (2020[98]) estimates that Americans spent 514 billion hours engaging mainly with content interspersed with ads in 2019, compared with 325 billion hours working. The opportunity cost for this time is around USD 7 trillion (Evans, 2020[98]).

Box 5. Other business models

New business models are emerging as a market response to consumer dislike of digital advertising and increased online tracking, which is also resulting in increased use of ad blocking services. Subscription models, for example, can remove the need for digital advertising altogether, reduce ad exposure, or make a business less reliant on this revenue source (for example, many online newspapers now offer or require subscription but this rarely removes all ads on the site).[1] In some cases, businesses offer a hybrid by offering "freemium" models, where a basic service is supplied free of charge, and more premium services are offered to those that pay to subscribe.[2]

Further, new technologies are facilitating "micropayments" which may make alternative business models more workable by allowing consumers to make small payments to site owners thus reducing the need for digital advertising revenue.[3]

Even in the case of business models that rely on advertising revenue, some businesses are choosing to supply search advertising that is not based on a consumer's data broadly, but only on those terms inputted by the consumer.[4]

Source: Weinberg (2020[103]).
Notes:
[1] For example, in the case of television streaming services such as Disney+ and Netflix.
[2] For example, Spotify and YouTube offer freemium business models.
[3] For example, the Brave browser.
[4] For example, DuckDuckGo, a provider of Internet search services, does not collect personal information from its users. Instead, it earns revenue from digital ads that are based solely on the search terms entered by the user, and some revenue from affiliates who pay DuckDuckGo when it sends a user to an affiliate's site

4.1.2. Multi-sided markets and network effects

Digital advertising markets are multi-sided markets, bringing together advertisers on one side of the market, publishers (and content providers) on another, and consumers on yet another (Lear, 2019[97]; OECD, 2017[7]; Evans, 2020[98]). The success of businesses operating in these markets will depend on their ability to get all sides of the market to "come to the table". That is, their ability to attract high-quality ad space (i.e. publishers/content) which attracts consumers, and their ability to attract advertisers. Indeed, multi-sided markets, such as digital advertising markets, can be used to solve issues of transaction costs and asymmetric information that prevent exchanges from taking place directly between the various sides of the market (Evans, 2020[98]; Rochet and Tirole, 2006[104]).

Multi-sided markets usually involve positive (cross-platform) network externalities such that the value of the platform to players on at least one side of the market increases with the number of players on the other side of the market (Katz and Shapiro, 1985[105]; OECD, 2017[7]). In the case of digital advertising markets,

there may be positive externalities between consumers and content providers where a matching service occurs, and then there is an audience-providing service between consumers and advertisers (OECD, 2017[7]). The nature and size of these cross-platform network effects is of key importance to assessing the competition effects. In particular, these can be important to the question of market definition, and whether to look at all sides of the market separately or together.

Pricing decisions in multi-sided markets are distinctly different from those in more traditional markets. In particular, multi-sided markets often *"treat one side as a profit centre and the other as a loss leader, or, at best, as financially neutral"* (Rochet and Tirole, 2003, p. 991[106]). Further, multi-sided markets may be more prone to economies of scale.

Another issue relevant to multi-sided markets, especially when looking at market definition as well as pricing and market outcomes, is whether consumers single-home or multi-home (OECD, 2017[7]; Rochet and Tirole, 2003[106]). Single-homing occurs where consumers tend to only use one platform. Multi-homing occurs when consumers tend to use more than one platform. The effects and implications of multi- or single-homing are not always straightforward. Where consumers tend to single-home on one side of the market, platforms may compete more intensely for those consumers (OECD, 2017[7]). (Though single-homing could alternatively suggest that a market has already "tipped" to monopoly.) Conversely, competition for consumers that multi-home may be less intense. However, multi-homing can suggest different things. Multi-homing could be due to product differentiation meaning that the platforms are not close substitutes, and could arguably be in separate product markets. Alternatively, multi-homing could suggest that indirect network effects are low and market tipping is less likely (OECD, 2017[7]). Single-homing, in comparison, may suggest that the platform acts as a bottleneck for those consumers.

The CMA's market study found that publishers tend to single home, or use only one publisher ad server (e.g. one seller of advertising space on their website) (CMA, 2020[76]). It also found that switching ad servers is a complex, lengthy and risky process. These factors together suggest that new entrants may find it difficult to attract publishers. The CMA (2020[76]) also found that while consumers do tend to multi-home in relation to social media, this does not necessarily act as a competitive constraint where social networks are not close substitutes and where there is a lack of interoperability (meaning that users have to re-create their social networks).

4.1.3. Substitutability in the digital advertising supply chain

Digital advertising markets are multi-sided markets, meaning there is a question about whether to define the various sides of the market individually or collectively, among other things. Some have even considered whether there should be a broader "market for attention" (Wu, 2017[100]; Evans, 2020[98]). In undertaking an ex post review of digital mergers on behalf of the CMA, Lear (2019[97]) found that competition authorities have not always taken adequate consideration of multi-sided markets. Instead, the focus has tended to be on the user's side of the market. It recommended that all sides be considered jointly in future cases involving multi-sided markets, such as in digital advertising markets.

Key to determining relevant markets is looking at the substitutability of products or services, both from the demand and supply sides of the market. This is a more involved process in multi-sided markets, as substitutability needs to be considered from the perspective of participants on each side of the market. While market definition is a fact-intensive exercise, and can change over time, there appears to be some consistency in how competition authorities have decided certain facts regarding substitutability, finding:

- There is limited substitutability between digital advertising and other forms of offline advertising (European Commission, 2008[107]; Autorité de la concurrence, 2018[95]; CMA, 2020[76]). The recent growth in digital advertising has partly come at the expense of other forms of advertising, suggesting some amount of substitutability. However, the ability to undertake targeted advertising

online, but not offline, means that this substitutability is limited. Advertisers tend to view these forms of advertising as complements rather than substitutes (CMA, 2020[76]).

- There is limited substitutability between digital display advertising and search advertising (Autorité de la concurrence, 2018[95]; CMA, 2020[76]; FTC, 2007[108]; Bundeskartellamt, 2019[109]). From an advertiser's perspective, search and display advertising serve different purposes. In particular, as discussed in Section 2.2.1, search advertising can be more closely linked to a consumer's intent to buy, and tends to have a higher conversion rate than display advertising. In comparison, display advertising tends to be used to increase brand awareness and reach new audiences (CMA, 2020[76]). Hence, search and display advertising tend to be viewed as complements, rather than substitutes, by advertisers.
- There is limited substitutability between video and non-video digital advertising (CMA, 2020[76]). The CMA (2020[76]) found that advertisers view these as complements rather than substitutes. This does not appear to have been considered at length by other competition authorities.
- Within display advertising, there is substitutability between advertising supply services provided by a publisher on its own platform (i.e. an "owned and operated" platform) and those provided via ad tech intermediaries (CMA, 2020[76]). In particular, both options offer similar advertising formats, audiences and targeting techniques, and are viewed as substitutes by advertisers.
- The findings above would also tend to suggest that there is no general "market for attention" (CMA, 2020[76]). Indeed, none of the high profile decisions in digital advertising markets have found that there is a general "market for attention".

4.1.4. Barriers to entry

A number of competition agencies have looked at barriers to entry in respect of search advertising and digital display advertising, including on social media. In doing so, they found that the main platforms for accessing consumers both for search and display advertising (i.e. some of the most desirable places to publish ads) benefit from economies of scale and network effects (ACCC, 2019[93]; CMA, 2020[76]).

Economies of scale mean that the marginal costs decline as the business grows. This can make it difficult for new entrants to compete with incumbent platforms as their marginal costs will be higher until they achieve a similar scale. Economies of scope may also be relevant given some of the key players in digital advertising operate across multiple distinct but related markets.

Network effects (also called network externalities) occur when demand for a product or service is influenced by the number of other consumers using the product or service, or demand for the product or service more generally (Economides, 2008[110]). In the case of social networks especially, multiple competition agencies have found that there are strong positive network effects, meaning that the value of these platforms to other users is greater the more users they have (CMA, 2020[76]; ACCC, 2019[93]). Positive network effects may also be relevant in Internet search (CMA, 2020[76]).This means that new entrants into these markets may find it difficult to compete with incumbents with an established user base, especially if there are barriers to switching, such as a lack of data and user interoperability and data portability.

Access to data has been identified as a barrier to entry in digital advertising markets in a number of market studies and articles (Autorité de la concurrence, 2018[95]; Bundeskartellamt, 2018[96]; CMA, 2020[76]; Scott Morton and Dinielli, 2020[58]; U.S. House of Representatives, 2020[88]). While the amassing of consumer data may benefit from economies of scale and scope, a new entrant that is able to access data may be able to enter and expand even without achieving scale or scope. Access to a broad range of consumer data is likely to be important for any business involved in buying or selling targeted advertising.

More details on the specific barriers to entry that might exist in search advertising and digital display advertising are outlined below.

Search advertising

The CMA (2020[76]) identified a number of potential barriers to entry and expansion in relation to the sale of search advertising including:

- Access to consumers' click-and-query data at scale. Click-and-query data helps search engines to improve the relevance of results by training the search algorithm.
- Access to location data, which can be used to better target advertising.
- Agreements with providers of mobile devices to be the default browser and search engine.
- Economies of scale in developing a web index (that is, indexing the contents of a website or of the Internet as a whole) are also a potential barrier to entry. Crawling and indexing the web represents a significant cost for search engines, and there are economies of scale in that the costs associated with crawling and indexing do not increase proportionally with the number of users.[23]

Display advertising on social media

The CMA (2020[76]) found that social media platforms are characterised by same-side and cross-side network effects. Strong same-side network effects lead to feedback loops. More users joining the platform leads to still more users joining, whilst users leaving the platform leads to still more users leaving. In comparison, cross-side network effects occur where a social network attracts advertisers, which is important to raising revenue. Access to consumer data can also act as a barrier to entry (CMA, 2020[76]).

4.1.5. Market power, market consolidation and vertical integration

Each of the digital advertising market studies cited in Box 4 note concerns about increasing market power, consolidation and vertical integration in digital advertising markets. These issues were also highlighted in the recent US antitrust report on "big tech", which noted that many market participants refer to Google and Facebook as holding a digital advertising duopoly (U.S. House of Representatives, 2020[88]).

Numerous competition agencies have found that Google is dominant at various levels of the advertising supply chain, and especially in respect of search advertising (Autorité de la concurrence, 2018[95]; Bundeskartellamt, 2018[96]; ACCC, 2019[93]; CMA, 2020[76]). In its recent market study on digital advertising, the CMA found that Google's "significant market power" in search advertising allows it to charge prices that are 30-40% higher than those set by its closest competitor in the United Kingdom (CMA, 2020[76]). Further, Google's overall margins have averaged over 20 % for 9 of the past 10 years (U.S. House of Representatives, 2020[88]).

Google, through its parent company Alphabet Inc., operates a fully integrated service offering in respect of digital advertising, which includes:

- Services on the supply side of the market including the ad network "AdSense" (for smaller publishers), an integrated Supply Side Platform (SSP) and Publisher Ad Server, called "Google Ad Manager" (for larger publishers), and "Google AdMob" (for mobile app publishers).
- Services on the demand side of the market including the ad network "Google Ads" (for smaller advertisers), and an integrated Demand Side Platform (SSP) and Advertiser Ad Server, called "Google Marketing Platform" (for larger advertisers) (Poole, 2018[111]; CMA, 2020[76]).

As noted in the recent US antitrust report on big tech (U.S. House of Representatives, 2020, p. 206[88]):

> *Google is a prominent player in both search advertising and digital display advertising, and it captures over 50% of the market across the ad tech stack, or the set of intermediaries that advertisers and publishers must use to buy, sell, and place ads. Specifically, Google*

> *runs the leading ad exchange, while also running buy- side and sell-side intermediary platforms trade on the exchange.*

Further, Google's multiple consumer-facing applications — including Search, Chrome, Android, and Maps — allow it to "mine its ecosystem" to combine a unique set of consumer data to underpin targeted online advertising (U.S. House of Representatives, 2020[88]).

Some commentators (Srinivasan, 2019[77]; Scott Morton and Dinielli, 2020[58]; Geradin and Katsifis, 2019[36]) claim that Google's current market position has partly been achieved through the acquisition of a number of previously independent businesses along the digital advertising supply chain including:

- DoubleClick, the leading ad server globally at the time, in 2007 (now "Google Ad Manager").
- AdMob, the leading ad network for mobile at the time, in 2010 (now "Google AdMob").
- Invite Media, the leading DSP, in 2010 (now part of "Google Marketing Platform").
- AdMeld, a leading SSP at the time in 2011, which it integrated into its ad exchange (now "Google Ad Manager").
- Adometry, an analytics and attribution provider, in 2014 (now part of "Google Marketing Platform").

Numerous competition agencies have also found that Facebook has considerable market power in relation to its digital advertising services, and its social networking services (Autorité de la concurrence, 2018[95]; Bundeskartellamt, 2018[96]; ACCC, 2019[93]; CMA, 2020[76]). Indeed, the US subcommittee on antitrust, commercial and administrative law recently went so far as to say that *"Facebook has monopoly power in online advertising in the social networking market"* (U.S. House of Representatives, 2020, p. 170[88]). Facebook is vertically integrated as a so-called "walled garden" that sells advertising space to advertisers, both on its own platforms (e.g. Facebook and Instagram) as well as on other sites and apps in its "Facebook Audience Network". In addition, it provides ad selling and serving services to publishers (sellers of advertising space). Facebook operates a self-service interface for programmatic trading that allows advertisers to set bidding strategies directly with Facebook. Facebook then decides which ad to show, manages the physical delivery of the bid and provides verification and attribution data back to the advertiser (CMA, 2020[76]). Advertising on Facebook is seen by some market participants as being "unavoidable" or a "must have" due to the scale and reach of its social network platforms, and given its access to highly detailed consumer data (U.S. House of Representatives, 2020[88]). Further, Facebook's average revenue per user, which largely represents digital advertising revenue, is much higher than that of other social networks (U.S. House of Representatives, 2020[88]).

Increased market concentration and vertical integration could be due to structural reasons, such as network effects and economies of scale, as discussed in the preceding sections. Alternatively, it could be the result of mergers, or anti-competitive conduct. These issues are discussed in more detail in Sections 4.2 and 4.3 below. It is worth noting that increased vertical integration in and of itself is not necessarily problematic from a competition point of view. Indeed, empirical evidence suggests that most vertical mergers are either pro-competitive or neutral, as vertical mergers often bring efficiency benefits through enhanced vertical co-ordination and economies of scope (OECD, 2019[112]; OECD, 2007[113]). Vertical mergers will only cause competition problems where they increase the likelihood that the merged entity can engage in foreclosure strategies or horizontal collusion. Foreclosure is more likely where the merger enables a firm to create entry barriers, gain bargaining power or avoid market regulation (OECD, 2019[112]).

While competition agencies are concerned about competition in digital advertising markets, it is not clear whether increased consolidation and vertical integration has increased digital advertising prices or reduced advertising inventory. Indeed, the producer price index for digital advertising has steadily declined over the last ten years in the United States (Federal Reserve Bank of St. Louis, 2020[114]). Manne et. al. (2020[115]) argue that growing amounts of digital advertising, and advertising revenues, in the face of decreasing

prices, suggests that there is competition in the digital advertising market.[24] However, the relevant counterfactual might well have been even lower prices. Indeed, if cost are largely fixed, than one could expect prices to decrease as volumes increase. Further, profitability may be a more useful indicator of the level of competition in the market. In this respect, the CMA (2020[76]) has found that the profitability of the main digital advertising platforms[25] are in excess of what could be expected in a competitive market. To the extent that there may be a lack of effective competition in digital advertising, this also has implications for prices and potentially competition in downstream markets. This is discussed in Box 6.

Box 6. Impacts of advertising on competition in retail markets

There was work undertaken in the 1960s and 70s to understand the impact of advertising on competition. Tesler (1964[117]) found that the theory was inconclusive, and the empirical evidence showed no clear relationship between advertising and competition. Indeed, his dataset suggested that while advertising had increased over time, concentration had fallen, and that advertising tended to be associated with entry, and thus, competition. Numerous papers followed which supported and disputed these findings. In reviewing the literature, Comanor and Wilson (1979[118]) found that while "heavy advertising" may be anticompetitive, this only affects some industries.

Sutton's work on endogenous sunk costs added to the literature (Sutton, 1991[119]). His model predicts that in certain markets, competition may spur an "arms race" in investing in advertising. Under the model, a business may choose to invest in advertising where this increases the profitability of each unit sold (by improving the relative desirability of its product). As market size and output increases, the incentive to invest in advertising increases (for all businesses). However, since the benefit is relative to other businesses' investment, if all businesses invest, the investment produces little or no increased industry profits in the long run. Any competitive advantage gained by a business investing in advertising is undone when other firms also make this investment. Business profitability may even fall in the long run in an expanding market if the additional profit gained from increased sales is less than the additional investment in advertising. However, a business risks losing sales if it does not invest in advertising. In this way, competitive pressures may drive businesses to make investments in advertising which in the long run mostly serve to raise the cost of participating in the market, rather than driving up profits. Hence, advertising-intensive industries tend to be more concentrated than less advertising-intensive industries (Sutton, 1989[120]).[26]

It is not clear whether these findings would change for digital advertising. The reasons for businesses using advertising have not fundamentally changed. Namely, they do it to build brand recognition, and ultimately, increase profits. In the context of digital advertising, Evans (2020[98]) argues that advertising can solve a problem of transaction costs that prevents advertisers from paying to send their messages to consumers by "making a market" to connect consumers and advertisers. To the extent that digital advertising is more accessible to more businesses than other forms of advertising, since placing a digital ad is relatively easy and cheap, more businesses may now able to engage in advertising. While this could be expected to affect competition in those markets, the precise impact will depend on market characteristics, and is an empirical question.

What can be said is healthy competition in digital advertising markets is important for competition in those markets that use digital advertising (Geradin and Katsifis, 2019[36]). A lack of effective competition in the digital advertising supply chain could potentially increase advertising costs, which will ultimately result in higher prices for final goods. Analysis by Prat and Valletti (2019[99]) suggests that increasing concentration among what they call "attention brokers" can lead to higher ad prices, fewer ads being sold to new entrants in product industries, and lower consumer welfare in the product industries.

4.2. Concerns over market conduct

A number of commentators have raised concerns about the conduct of some players in digital advertising markets (Srinivasan, 2019[77]; Scott Morton and Dinielli, 2020[58]; Geradin and Katsifis, 2019[36]; Geradin and Katsifis, 2019[92]; Srinivasan, 2019[116]). The concerns cover a range of issues including self-preferencing, leveraging and market opacity, as discussed below.

4.2.1. Self-preferencing

A number of reports and articles raise concerns that vertical integration along the digital advertising supply chain can raise conflicts of interest (CMA, 2020[76]; Srinivasan, 2019[77]; Geradin and Katsifis, 2019[92]; Scott Morton and Dinielli, 2020[58]). In particular, the concern is that platforms that sell ad inventory and act as intermediaries for publishers and advertisers may have the ability and incentive to favour their own sources (CMA, 2020[76]). To the extent that there is a lack of effective competition in the market, and a lack of market transparency (see Section 4.2.4), this conflict of interest could be more concerning (CMA, 2020[76]).

Conflicts of interest could provide the incentive for vertically integrated platforms that also provide services to competitors to favour their own business. In this respect, some commentators have argued that certain platforms in the digital advertising supply chain have given preferential treatment to their own business units in respect of access to consumer (and other) data, access to the auction, and speed:

- **Access to data:** As noted in Chapter 2, access to consumer data is critical to being able to target digital display advertising. Indeed, if a Demand Side Platform (DSP) is not able to access consumer data (on an advertiser's behalf) regarding advertising inventory, then it will submit a lower bid, and will be less likely to win the auction. Hence, access to consumer data is of key importance for advertisers (in order to reach a certain consumer), and publishers (in order to receive higher bids). More broadly, access to data is important for ad attribution, billing, and managing advertising campaigns. Commentators have highlighted a number of instances where platforms have enacted barriers to consumer data interoperability, which could give certain parties an advantage, and potentially raise rivals' costs.[27] Concerns have also been raised about preferential access to commercially sensitive auction data that stems from the integration of Supply Side Platforms (SSPs), DSPs and ad exchanges.[28]
- **Access to the auction:** There have been concerns raised that certain auction designs may have given vertically integrated entities an advantage when participating in programmatic advertising auctions (see, for example, Scott Morton and Dinielli (2020[58]), Srinivasan (2019[77]), and Geradin and Katsifis (2019[36])). To the extent that an intermediary's auction favours its own business units, and the competitive dynamics are such that advertisers or publishers are compelled to stick with that intermediary despite the potentially anti-competitive effects of its auction, this could potentially distort competition, as was discussed in Section 3.3.2. If there is sufficient competition between intermediaries, this could be expected to drive competing intermediaries to offer auction rules that do not bias any particular players in the supply chain.**Speed:** As noted in Section 3.3, digital ads trade in milliseconds. Further, exchanges tend to limit the amount of time that intermediaries have to submit bids. Hence, speed is an advantage. Not only does greater speed allow intermediaries to ensure they can make a bid in the allotted time, faster speeds also allow intermediaries more time to check other sources of consumer data, which might better inform their bid (Srinivasan, 2019[77]). Where a vertically integrated business provides itself with speed advantages not available to competitors, this could potentially raise its rivals' costs. To the extent that a vertically integrated platform anti-competitively favours itself along the supply chain, and publishers and advertisers cannot avoid the platform, this could potentially have the effect of raising rivals' costs and/or foreclosing competitors.

4.2.2. Leveraging

Commentators have also raised concerns that vertically integrated businesses with market power in one part of the digital advertising supply chain could leverage that market power into other parts of the supply chain (Scott Morton and Dinielli, 2020[58]; U.S. House of Representatives, 2020[88]). Leveraging is more likely to be successful in situations where a platform with market power is able to increase barriers to switching on the various sides of the market. Issues such as a lack of data interoperability, and the fact that many smaller advertisers single-home, may increase leveraging concerns (CMA, 2020[76])[29].

4.2.3. Collection of user data

The CMA (2020[76]) has raised concerns about certain platforms potentially abusing their market power to collect greater amounts of consumer data, which is a key input to targeted advertising, especially for digital display advertising. Such concerns are also raised by Srinivasan (2019[116]) and Scott Morton and Dinielli (2020[58]). In particular, in order to use a service provided by a dominant firm, a consumer may be asked to share ever increasing amounts of their data. This could be akin to a reduction in the quality of the product (i.e. a lowering of consumer privacy) with no offsetting increase in other aspects of the quality of the product, or otherwise, an offsetting reduction in price (OECD, 2020[2]).

The CMA (2020[76]) noted concerns that consumers do not understand what information they are sharing when they use these services, and how that data will be used. To the extent that a dominant platform requires users to share significant amounts of personal data in order to use a service, and collates such data from a variety of sources to be used in various ways, this could potentially constitute an abuse of a dominant position in some jurisdictions (OECD, 2020[2]).

A number of competition (and consumer) cases are currently underway in respect of the data collection and use practices of certain platforms that are active in digital advertising markets, as discussed in Section 4.3.

4.2.4. Market opacity

Multiple articles and market studies cite a lack of transparency as a key issue in digital advertising markets (Geradin and Katsifis, 2019[36]; Geradin and Katsifis, 2019[92]; Scott Morton and Dinielli, 2020[58]; Srinivasan, 2019[77]; CMA, 2020[76]; U.S. House of Representatives, 2020[88]). In this respect, Geradin and Katsifis (2019[36]) cite concerns about the “ad tech tax”, which has been estimated to capture between 55 % and 70 % of programmatic revenues. A lack of transparency around auction prices and exchange fees, coupled with concerns around conflicts of interest and auction design, raise at least the theoretical possibility that certain vertically integrated platforms could engage in arbitrage (or margin squeeze). As part of its digital advertising market study, however, the CMA found no evidence of the UK’s dominant exchange having charged hidden fees or excessive margins in the UK between 8-14 March 2020 (CMA, 2020[76]). Notwithstanding this, the CMA was very concerned about the lack of price (and general market) transparency for both advertisers and publishers involved in digital advertising markets. In this respect, market opacity extends beyond pricing: there is little reporting on the number of bids that are excluded due to latency (that is, because they were submitted after an exchange’s cut off time) (Srinivasan, 2019[77]); and there is a lack of common standards for measuring ad performance (Scott Morton and Dinielli, 2020[58]).

4.3. Relevant competition cases

This section summarises some of the key competition cases that have been brought or assessed in OECD countries in digital advertising markets, either as abuse of dominance cases, or merger cases.

4.3.1. Abuse of dominance cases

There are a few abuse of dominance cases that have occurred in markets related to digital advertising, as outlined below.

Abuse of dominance in search advertising

European Commission

In March 2019, the European Commission (EC) fined Google EUR 1.49 billion for misusing its dominant position in the market for the brokering of online search ads (European Commission, 2019[121]). In particular, the EC found that Google abused its dominant position in online search advertising intermediation by artificially restricting the possibility of third-party websites to display search advertisements from Google's competitors.

Websites such as newspaper websites, blogs or travel site aggregators often have an embedded search function which can deliver both search results and search adverts. Through AdSense for Search, Google provides search adverts to owners of these publisher websites. In this role, Google acts as an online search advertising intermediary between advertisers and publishers. Over the period of the investigation (2006-2016), the EC found that Google was the strongest player in online search advertising intermediation in the European Economic Area (EEA).

Competitors in online search advertising[30] cannot sell advertising space in Google's own search engine results pages. Hence, third-party websites represent an important entry point for Google's competitors in online search advertising. Google provided intermediation services to the most commercially important publishers via individually negotiated agreements. The EC found that many of these agreements included anti-competitive clauses including:

- From 2006: Exclusivity clauses that prohibited publishers from placing search adverts from Google's competitors on their search results pages.
- From March 2009: "Premium Placement" clauses which required publishers to reserve the most profitable space on their search results pages for Google's adverts and a minimum number of Google adverts, as well as clauses requiring publishers to seek written approval from Google before making changes to the way in which any rival adverts were displayed.

Google's practices covered over half the market by turnover for most of the period. Hence, the EC found that Google's rivals were not able to compete on the merits, either because there was an outright prohibition for them to appear on publisher websites or because Google reserved for itself the most valuable commercial space on those websites, while at the same time controlling how rival search ads could appear. Hence, the EC found Google to be in breach of Article 102 of the Treaty on the Functioning of the European Union (TFEU) and Article 54 of the EEA Agreement, in respect of its online search advertising intermediation services.

The decision followed earlier cases against Google in respect of comparison shopping services in 2017 (European Commission, 2017[122]) (see below), and in respect of Google search on Android mobile devices in 2018 (European Commission, 2018[123]).

European Commission – Google Shopping case

In June 2017, the EC fined Google EUR 2.42 billion for abusing its dominant position in the general search market by favouring its own vertical comparison shopping service in its search results page (European Commission, 2017[122]). Article 102 of the TFEU provides a non-exhaustive list of conduct that could amount to abusive behaviour. The theory of harm considered in this case was novel.

The EC found that Google provided an "illegal advantage" to its own comparison shopping service by demoting rivals and presenting its own service in a more favourable position in its search results through algorithms (OECD, 2020[124]). In particular, Google was found to have leveraged its position in the general search market to the market for comparison shopping services. The EC noted that consumers are much more likely to click on results that are visible, and notably those which appear on the first page of results. The Commission identified specific evidence of drops in traffic to rival services because of Google's demoting practices. The EC argued that Google's self-preferencing conduct foreclosed competing comparison shopping sites from the market, which reduced consumer choice.

The US Federal Trade Commission (FTC) also conducted an investigation into Google's search practices but ultimately closed its investigation into allegations of Google's "search bias" (OECD, 2020[124]). It found that changes in how Google displayed its content (through algorithm and design changes) could be viewed as quality improvements and did not find the practices were anticompetitive. The Turkish Competition Authority also discontinued a similar investigation (OECD, 2020[124]).

France

In December 2019, the Autorité de la concurrence (France) fined Google ERU 150 million for an abuse of a dominant position in the search advertising market by *"adopting operating rules of its Google Ads advertising platform which are opaque and difficult to understand and by applying them in an unfair and random manner".* (Autorité de la concurrence, 2019[125]). In particular, the Autorité found that the Google Ads rules that applied to advertisers were non-objective, non-transparent and enforced in an inconsistent and sometime discriminatory manner. It required Google to amend its operating rules and account suspending procedures.

Korea

The Korea Fair Trade Commission (KFTC) undertook an abuse of dominance investigation into search engines Naver and Daum. In particular, the KFTC alleged that the failure of these platforms to distinguish between paid and unpaid search results was an abuse of dominance (Kim, Baek and Kim, 2017[126]). To support this claim the KFTC conducted research with 1 000 consumers, finding that approximately 85% of consumers could not identify the paid advertising results (Kim, 2018[127]). The case was settled via a consent decision in March 2014 that required Naver and Daum to, among other things, clearly distinguish between organic search results and paid ads (Korea Fair Trade Commission, 2014[128]).

Abuse of dominance in respect of data collection

Germany

In March 2016, Germany's competition authority, the Bundeskartellamt, launched an abuse of dominance investigation of Facebook in respect of its data practices. In February 2019, it found that Facebook had abused its dominant position in the social media market in respect of the collection of "off Facebook" data (Bundeskartellamt, 2019[109]). That is, data collected from unrelated third parties. In particular, in using Facebook's services, consumers had to agree to Facebook collecting their data both on Facebook, and across an extensive range of third party websites and apps. Such data was used to support Facebook's online advertising services, which contributed 98% of Facebook's revenue in 2018 (Bundeskartellamt, 2019[109]).

The Bundeskartellamt found that Facebook was dominant in the social media market in Germany. It also found that Facebook had not gained meaningful consent from consumers in respect of its data tracking practices, and the merging of this data to consumers' Facebook profiles. In assessing the data practices of Facebook, the Bundeskartellamt applied the standards in Europe's General Data Protection Regulation

(GDPR) and found Facebook's practices lacking, which it found amounted to an abuse of dominance. It argued that Facebook's dominant market position essentially put consumers in a "take-it-or-leave-it" position and it found that Facebook's data practices served to entrench Facebook's dominant position in the national social network market (Bundeskartellamt, 2019[129]; Bundeskartellamt, 2019[109]).

Facebook appealed the decision to the Higher Regional Court in Dusseldorf, who suspended the order in August 2019 (CPI, 2019[130]; Higher Regional Court Düsseldorf, 2019[131]). In particular, it did not accept that a possible violation of privacy rules would automatically trigger a violation of antitrust rules in the case of a dominant company. In addition, the court was of the opinion that consumers decide autonomously whether they agree with Facebook's terms and conditions when signing up for the service. It further found that Facebook's data collection was not exploitative since consumers could continue to make the same data available to other companies. Moreover, it found that the Bundeskartellamt did not demonstrate how Facebook's data practices damaged competition. The suspension of the order relieved Facebook from implementing the Bundeskartellamt's decision.

The Bundeskartellamt appealed the suspension to the Federal Court of Justice. In its decision on interim proceedings of 23 June 2020 regarding enforceability, the Federal Court of Justice (Bundesgerichtshof, BGH) ruled in favour of the Bundeskartellamt (Bundesgerichtshof, 2020[132]). The BGH found that there were no serious doubts as to Facebook's dominant position in the German market for social networks nor Facebook's abuse of this dominant position by using the terms of service prohibited by the Bundeskartellamt. In deciding the case, the BGH found that the terms of service deprive Facebook users of choice, and that this could impede competition, both in social network markets, and potentially, online advertising markets, which also rely on consumer data. However, the BGH did not agree with the Bundeskartellamt's approach to using the GDPR as the relevant standard for assessing an abuse of dominance. The case is ongoing and pending a decision by the Düsseldorf Higher Regional Court on the merits (Podszun, 2020[133]).

Ongoing investigations

In November 2018, the French Autorité de la concurrence announced that it was opening an investigation into the abusive collection and use of personal data, as well as access restrictions, in digital advertising markets (Autorité de la concurrence, 2018[134]).

Another ongoing case of interest is the ACCC's Federal court proceedings against Google under consumer law. In particular, the ACCC alleges that Google misled consumers in respect of the collection and use of their data for digital advertising between 2016 and 2018 (ACCC, 2020[135]).

4.3.2. Merger cases

There are multiple merger cases that have involved companies active in digital advertising markets, as outlined below. The section below focusses on Google and Facebook acquisitions given the findings of multiple competition agencies regarding the dominance of these businesses in digital advertising markets (see Section 4.1.4).

Google acquisitions

Google/DoubleClick

Google/DoubleClick involved a 2008 merger between two parties with the ability to collect and use substantial amounts of user data for the purposes of targeted digital advertising. At the time, Google collected consumer data through its Internet search service and participated in the digital advertising market predominately as an ad publisher (e.g. seller of ad space on its Internet search website).

DoubleClick was the leading ad server globally: it sold ad serving, management and reporting technology to website publishers, advertisers and advertising agencies. DoubleClick was also in the process of launching its own ad exchange (for the buying and selling of digital ad space). The merger was cleared by both the FTC and the EC. Though in the United States, Commissioner Pamela Jones Harbour dissented, predicting that the merger would harm competition and threaten privacy (Jones Harbour, 2007[136]).

In its decision, the EC (2008[107]) found that Google and DoubleClick did not exert major competitive constraints on each other and were not competitors in the relevant markets for the provision of online advertising space, intermediation in online advertising or the provision of online display ad serving technology. Further, it found that removing DoubleClick as a potential competitor of Google would not have an adverse effect due to the existence of other competitive constraints. The EC also concluded that, post-merger, Google would not have the ability or incentive to foreclose competitors or increase their costs.

The FTC's analysis considered three theories of potential competitive harm (FTC, 2007[108]). First, it found that Google and DoubleClick were not direct competitors in any relevant market. Second, it considered whether they would become competitors in the future, especially in relation to Google's efforts to enter the third-party ad serving markets. It found that competition among firms in this market was vigorous, and likely to increase. Third, it considered whether Google's acquisition of DoubleClick could allow Google to exploit DoubleClick's position in the third-party ad serving markets to the benefit of Google's ad intermediation product. For example, by exclusively bundling – or otherwise tying together – its product with the acquired firm's product after the acquisition. The FTC found that DoubleClick did not have market power in the third-party ad serving market, and hence, it would be unlikely that Google could foreclose competition in the related ad intermediation market following the acquisition. It also found that any aggregation of consumer and competitive data resulting from the acquisition would be unlikely to harm competition in the ad intermediation market. However, it did note that digital advertising markets are dynamic and evolve quickly, making future predictions about market development particularly difficult.

These decisions have since been criticised for, among other things, not sufficiently considering the data advantage that DoubleClick had, or the impact on third-party tracking (Ezrachi and Roberston, 2019[137]; Binns and Biettib, 2019[138]; Srinivasan, 2019[77]).

Google/AdMob

The FTC cleared Google's acquisition of AdMob in 2010 (FTC, 2020[139]). The FTC identified Google and AdMob as the leading two mobile ad networks at the time, with AdMob drawing most of its revenue and market share from the iPhone platform. In clearing the merger, the FTC relied on the competitive constraint posed by Apple, especially given its acquisition of the third largest mobile ad network, Quattro Wireless, in December 2009. It also considered that the development of competing smartphones, to rival Google's Android and Apple's iPhone, would pose a further competitive constraint on the merged entity.

Google/Waze

Google's acquisition of Waze was cleared by both the FTC and the UK's (former) Office of Fair Trading (OFT) in 2013 (Competition Policy International, 2020[140]; OFT, 2013[141]). At the time, Google operated its Internet search engine, sold advertising space, and offered Google Maps, a free application providing mapping and navigation services. Waze provided a mobile navigation app. In its decision to clear the merger, the OFT did not consider the revenue models of Google Maps and Waze (Lear, 2019[97]). Mapping services can be monetised directly, through in-app advertising, and indirectly, through the collection, use or sale of locational data. The merger with Waze might have increased Google's dominant position as a collector and supplier of locational data, which is an important input to personalised digital advertising (Scott Morton and Dinielli, 2020[58]). In addition, Lear (2019[97]) found that the relevant authorities over relied

on the competitive constraint that Apple Maps would have exerted on the merged entity, especially as Android users cannot access Apple Maps.

Ongoing investigation: Google/Fitbit

The EC has opened an in-depth investigation to assess Google's proposed acquisition of Fitbit (European Commission, 2020[142]). Fitbit is an American company involved in developing, manufacturing and distributing wearable devices (both smartwatches and fitness trackers) and connected sales in the health and wellness sector, as well as in supplying related software and services. The EC's concerns focus on markets for the "supply of online search and display advertising services", as well the supply of "ad tech services". In particular, the EC is concerned that the acquisition could increase Google's access to consumer data, and its ability to gather such data. This could increase Google's data advantage in buying and selling personalised ad space, and affect competition in the relevant markets, to the detriment of advertisers and publishers. The EC has until 23 December 2020 to take a decision and the merger parties submitted a second set of proposed commitments on 28 September 2020 (EC, 2020[143]). This follows similar concerns raised by the ACCC in its Statement of Issues on the merger (ACCC, 2020[144]). Namely, the ACCC was concerned that the merger could potentially reduce competition in the supply of certain ad tech services in Australia.

Facebook/Instagram merger

Facebook's acquisition of Instagram was cleared by the OFT and the FTC in August 2012 (FTC, 2012[145]; OFT, 2012[146]). Facebook was, at the time, predominately a digital platform supplying social networking services, though it had recently launched a mobile photo app called Facebook Camera. Instagram, was at the time more limited than today, being predominately a free mobile photo app which allowed users to take, modify and share photos on Instagram and other social networks.

In its ex post assessment of the Facebook/Instagram merger, Lear (2019[97]) found that the merger increased the merged platform's size, user base exclusivity, and ability to target ads; factors that are important to competition in digital advertising markets. Specifically, the merger:

- increased the number of social network users that Facebook could reach, given that many of the users that left Facebook were those that were more attracted to Instagram, increasing the merged platform's size
- removed the competitive constraint that Instagram might have exerted on Facebook, especially for users that would have used both platforms, improving the merged entity's user base exclusivity
- improved Facebook's ability to merge data across the two platforms to obtain a richer data set, which is valuable for targeting ads.

Indeed, in the time since the merger, Instagram has grown into a highly successful social network, and allowing the merger has arguably increased Facebook's desirability as a seller of digital advertising inventory. However, as acknowledged by Lear (2019[97]), the merger also brought about efficiencies, which may have contributed to or accelerated Instagram's growth and success. Notwithstanding this, whether Instagram would have constrained Facebook in the absence of the merger would ultimately have depended on how close a substitute the platforms would have been absent the merger (OECD, 2020[147]).

5 Policy responses

As outlined in Chapter 4, numerous competition agencies and commentators have raised a number of competition concerns in digital advertising markets. The purpose of this chapter is to look at what types of policy approaches might address these issues. The chapter is structured according to the type of competition issue identified in Chapter 4, including policies to address:

- conflicts of interest that may give rise to anti-competitive conduct (Section 5.1).
- potential anti-competitive conduct, including self-preferencing and leveraging (Section 5.2)
- market opacity (Section 5.3).

Last, the chapter highlights the need for co-operation across policy areas and borders (Section 5.4).

5.1. Managing conflicts of interest

Conflicts of interest have been highlighted as a key concern in digital advertising markets by multiple competition agencies and commentators (see Section 4.2). There are a number of ways in which to manage conflicts of interest. At the most extreme, some have proposed structural separation to address these issues (Section 5.1.1). Alternatively, some competition agencies already have the ability to implement structural remedies as a response to issues identified in market studies. The applicability of such powers to digital advertising markets is discussed in Section 5.1.2. Conflicts of interest can alternatively be managed by regulating the types of anti-competitive conduct that could occur, as discussed in Section 5.2, and ensuring greater transparency, as discussed in Section 5.3.

5.1.1. Structural separation

As mentioned in Chapter 4, the UK Competition and Markets Authority (CMA) has recently completed a market study on online platforms and digital advertising. After uncovering a range of potential competition issues, and highlighting concerns about conflicts of interest under the current market structure, the CMA made a number of recommendations to the government. Among these was a recommendation to provide a specialised Digital Markets Unit with the power to impose structural separation remedies (CMA, 2020[76]).

The CMA is not alone in proposing such tools. For example, US Senator Elizabeth Warren has proposed that (alongside other platforms that she identifies as “platform utilities”) Google’s ad exchange and businesses on the exchange should be structurally separated in order to avoid conflicts of interest and to promote market entry (Warren, 2019[148]). She also proposes to separate Google search from the rest of its activities. Warren further recommends that certain mergers be unwound as being anti-competitive. Among these she highlight’s Google acquisition of DoubleClick, Waze and Nest (see also Section 4.3.2).

Khan is another proponent of structural separation between platforms and commerce (Khan, 2019[149]). In respect of Facebook and Google, she highlights possible conflicts of interest these platforms have in distributing publisher’s content as well as competing with publishers in the sale of ad space. She also argues that Facebook and Google have used their dominant positions (as a communications network in the case of Facebook, and in search and advertising more generally for Google) to extract sensitive

business information from publishers, including information on publishers' audiences. Khan argues that structurally separating Google and Facebook's ad businesses would not only address concerns with conflicts of interest, it would also help protect news media and other content creation.

Most recently, the US House of Representatives antitrust report on big tech has also recommended that the US Congress consider legislation to allow for structural separation and line of business restrictions to manage conflicts of interest for some of the larger digital platforms (including those active in digital advertising markets) (U.S. House of Representatives, 2020[88]). It noted that both ownership separation and functional separation could be worth consideration, and noted the benefit of structural separation over other ad hoc competition remedies that require ongoing monitoring.

Srinivasan (2019[77]) has also identified structural separation as a possible way to manage conflicts of interest in digital advertising markets. In particular, she cites a number of markets, including certain financial markets and event ticketing markets, in which the company that operates the exchange is not able to also trade on the exchange. Srinivasan has suggested that this model of structural separation may be appropriate in the case of digital advertising. Specifically, she considers that Google, as a seller of ad space, could be required to divest its exchange, its buying tools, and Chrome. Alternatively, she considers that conflicts of interest could be managed through functional separation in addition to conduct and disclosure rules (see Box 7).

Box 7. Functional separation

As an alternative to full ownership structural separation, Srinivasan (2019[77]) suggests that intermediary conflicts of interest could be managed through "Chinese Walls" alongside conduct and disclosure rules. Conduct rules could be used to manage the incentive and ability of vertically integrated digital advertising intermediaries to self-preference in respect of access to data, speed and the auction (see Section 4.2.1). She also suggests that fiduciary duties could apply to digital advertising intermediaries to revert ownership interests in ad server data back to publishers and advertisers, empowering them to share user IDs and other market and consumer data as they see fit (see Section 5.2.6). Last, transparency and disclosure rules could be introduced, not only to improve transparency, but also to allow regulators to monitor how well advertising intermediaries are managing their conflicts of interest (see Section 5.3).

Source: Srinivasan (2019[77]).

While structural separation would directly address current concerns about conflicts of interest in digital advertising markets, it is also a costly regulatory solution. In particular, it has the potential to remove any efficiencies that have arguably been achieved through greater vertical integration. For example, it would remove economies of scale and scope in respect of data, which is a key input into targeted behavioural advertising. It might also remove other operational efficiencies from vertical integration. Moreover, any proprietary structural separation would have to ensure that it did not undermine the revenue basis for the many zero-priced services currently offered in the digital economy.

5.1.2. Powers to implement structural remedies

Without necessarily moving towards full structural separation, a number of jurisdictions have, or are considering introducing, powers for competition agencies to impose structural remedies in the case of identified structural competition problems. To the extent that such powers are broad enough to apply to

digital advertising markets, they could potentially be used to implement structural remedies to address conflict of interest issues in these markets.

For example, the European Commission (2020[150]) is currently planning to table a new competition tool to *"to deal with structural competition problems across markets which cannot be tackled or addressed in the most effective manner on the basis of the current competition rules (e.g. preventing markets from tipping)"* in December 2020. In particular, the EC is concerned that certain structural problems, such as network or scale economies, lack of multi-homing or lock-in effects, high concentration and high entry barriers, or lack of access to data (many issues applicable in digital advertising markets), cannot be remedied under its current competition laws.

A new competition tool would allow the EC, after conducting a public market study which identifies structural competition problems, to impose behavioural or structural remedies (without finding an infringement of competition law or imposing any fines). The scope of the tool could be limited to digital markets or markets that are in the process of digitalising (PaRR, 2020[151]). The EC is considering whether the tool should apply only in cases where there are already problems with market power, or also in markets with structural issues that could lead to dominance. Public consultation on the proposal was invited until 8 September 2020, with legislative changes anticipated for December 2020.

The new competition tool has some similarities with the CMA's powers in the United Kingdom (Ralston, 2020[152]). In the United Kingdom, the CMA can launch a market investigation where the findings of a market study suggest that a feature (or combination of features) of a UK market or markets prevents, restricts or distorts competition.[31] If the CMA does find an adverse effect on competition in the course of a market investigation, it can implement legally enforceable remedies to improve competition in the market. Such remedies may be limited to a finite duration (e.g. by including a 'sunset clause'). It is a public process in which the CMA publishes its final report, and parties can appeal the CMA's decision to the Competition Appeal Tribunal. Alternatively, it can recommend regulatory changes to the government, as it has chosen to do in its market study on online advertising regarding powers to implement structural separation, as noted above. Similar powers also exist for competition authorities in Greece, Iceland, Romania, Mexico and South Africa (Vestager, 2020[153]). However, there are concerns that such a tool could be used to side-step legal precedent and give competition authorities very broad discretion, which could reduce legal certainty for businesses (Lamadrid and Ibáñez Colomo, 2020[154]).

5.2. Protections against anti-competitive conduct

Chapter 4 highlighted a range of concerns about potentially anti-competitive conduct in digital advertising markets, ranging from self-preferencing conduct, to leveraging conduct. A number of jurisdictions are currently considering regulatory changes that could potentially address such issues.

5.2.1. Europe

The European Commission (2020[155]) is currently consulting on a new "Digital Services Act package". Among other things, the package proposes ex ante rules covering large online platforms acting as gatekeepers. Given that some of the key market players in digital advertising markets could arguably be identified as "gatekeeper platforms", it could be expected that these rules could influence competition in digital advertising markets.

The details of the ex-ante rules are still being developed following a public consultation that ended on 8 September 2020, and legislative changes are anticipated in the fourth quarter of 2020 (European Commission, 2020[156]). There are a number of options being considered (European Commission, 2020[157]) but two of the options that were consulted on include new rules that could address some of the forms of

conduct discussed in Chapter 4. In particular, self-preferencing, data access and unfair contractual provisions are mentioned in options 1 and 3.

5.2.2. Germany

To the extent that new powers under Germany's new Act on Digitalisation of German Competition Law ("GWB-Digitalisierungsgesetz") apply to some of the dominant platforms in digital advertising markets, this could also address some of the issues discussed in Chapter 4. The new law introduces a new concept of companies with "paramount cross-market relevance".[32] The draft bill includes factors for the competition authority to consider in determining whether a company has paramount cross-market relevance, and notes that upon finding that a company has paramount cross-market relevance, it may prohibit certain conduct including: i) self-favouring, ii) impeding competitors by leveraging market power, iii) using third-party data to create barriers to entry, iv) hindering interoperability and data portability, v) providing insufficient information about performance for customers (Höppner, 2020[158]).

5.2.3. France

The Autorité de la concurrence (2020[159]), drawing on the EU's Crémer review (2019[160]), the UK's Furman review (2019[161]), the Stigler review (2019[162]), initiatives of the Benelux authorities (2019[163]), and draft legislation in Germany (discussed above) (2020[164]), proposed additional levers under competition law to intervene in the case of anticompetitive conduct by "structuring digital platforms".[33] Specifically, it recommended that there could be a list of practices that could raise competition concerns specific to these players, for example (Autorité de la concurrence, 2020[159]):

- disfavouring competing products or services using their services
- hindering access to other markets
- using data in a dominated market to make access to that market more difficult
- impeding interoperability of products or services or data portability
- hindering the use of multi-homing.

In these cases, the competition authority could require the platform to change its practices or it could accept binding commitments from the platform. It recommended reversing the burden of proof so that if the platform wished to continue with the identified conduct, the platform would need to show that the conduct in question was efficiency enhancing (i.e. that it would benefit consumers). Reversing the burden of proof is something that has also been considered in respect of mergers (see Box 8).

Some of the key players in digital advertising markets could arguably be captured by the definition of "structuring digital platforms" that was proposed by the Autoritié, and the list of practices bears similarities with some of the forms of conduct that have raised concerns in respect of digital advertising markets, as discussed in Chapter 4.

5.2.4. United Kingdom

The Furman Review recommended the establishment of a Digital Markets Unit (DMU) to secure *"competition, innovation, and beneficial outcomes for consumers and businesses"* (Furman et al., 2019, p. 8[161]). Among other things, it recommended that (Furman et al., 2019, p. 9[161]):

> *The digital markets unit should work with industry and stakeholders to establish a digital platform code of conduct, based on a set of core principles. The code would apply to conduct by digital platforms that have been designated as having a strategic market status.*

It recommended that such a code of conduct could complement greater enforcement of competition law, and address problems identified by the review in respect of concentration and dominance in many online platform markets, self-preferencing conduct, and market consolidation. Namely, many of the issues that competition agencies have found are prevalent in digital advertising markets (see Section 4.2).

Box 8. Reversing the burden of proof

Some commentators consider that the current market structure in digital advertising markets reflects a failure of merger law to identify (at least some) anticompetitive mergers (Srinivasan, 2019[77]; Lohr, 2020[165]; U.S. House of Representatives, 2020[88]).

One proposal that has emerged regarding the acquisition of nascent firms has been to reverse the burden of proof and create a rebuttable presumption (OECD, 2020[147]). This has been proposed by Valletti (2018[166]) and Motta (Motta and Peitz, 2020[167]), both former chief economists in the EU, in the Crémer report (Crémer, de Montjoye and Schweitzer, 2019[160]), the Stigler review (Stigler Committee, 2019[162]), in the ACCC's digital platform review (ACCC, 2019[93]) and in France (Autorité de la concurrence, 2020[159]).*

Such an approach could apply when an acquirer has an entrenched dominant position, and could require the merging parties to provide evidence that either the merger does not raise any significant competitive issue, or that expected efficiency gains are sufficiently strong to justify the acquisition (Caro de Sousa and Pike, forthcoming[168]; U.S. House of Representatives, 2020[88]). If they were unable to do this, the acquisition would be blocked. This could be coupled with other proposals to change the notification thresholds, especially for dominant digital platforms (Stigler Committee, 2019[162]).

The burden of proof could also potentially be reversed in the case of dominant firms where the presumption would be that certain practices, such as, for example, self-preferencing, are anticompetitive. It would then be for the dominant firm to show that the practice has positive impacts for competition (for example, by achieving efficiencies that outweigh any anticompetitive impacts).

Note: * Proposition de loi visant à garantir le libre choix du consommateur dans le cyberespace: http://www.senat.fr/dossier-legislatif/ppl19-048.html

The aim of the code of conduct would be to clarify acceptable conduct between digital platforms and their users. In particular, there would be a set of core principles developed in line with possible theories of harm that can arise where platforms have power over their users (e.g. advertisers and/or competing publishers). For the business side of platforms with a strategic market status, which could be expected to capture some of the key players in digital advertising markets, the Furman review recommended that the principles should ensure that business users (e.g. advertisers and publishers in the case of digital advertising) are:

- provided access to designated platforms on a fair, consistent and transparent basis
- provided with prominence, rankings and reviews on designated platforms on a fair, consistent, and transparent basis
- not unfairly restricted from, or penalised for, utilising alternative platforms or routes to market (Furman et al., 2019[161]).

The recommended code of conduct would deal specifically with trying to prevent anti-competitive conduct (rather than trying to address a broader range of policy goals, for example).

In March 2020, acting on the recommendations of the Furman review, the UK government formed a dedicated "digital markets taskforce" (UK Government, 2020[169]). One of the first jobs of the taskforce will

be to advise on a potential methodology to designate digital platforms with "strategic market status", and the form and content of a code of conduct (UK Government, 2020[169]).

The CMA's recent market study on online platforms and digital advertising further supported the establishment of a digital markets unit with the powers to develop of a code of conduct to address the issues of market power in these markets (CMA, 2020[76]). The CMA also suggested an expansion to the types of powers given to a new digital markets unit to allow it to *"tackle sources of market power and increase competition, including powers to increase interoperability and provide access to data, to increase consumer choice and to order the breakup of platforms where necessary"* (CMA, 2020[76]). Regarding access to data, this could include powers to:

- Improve consumer control over data by providing choice over the use of data and facilitating consumer-led data mobility.
- Mandate interoperability to overcome network effects and coordination failures.
- Mandate third-party access to data where data is valuable in overcoming barriers to entry and expansion and privacy concerns can be effectively managed.
- Mandate data separation / data silos, in particular where the data has been collected by the platforms through the leveraging of market power.
- Introduce consumer choice and default interventions, to restrict platforms' ability to secure default positions and to introduce choice screens.
- Introduce different forms of separation interventions, from operational separation, to full ownership separation, to address potential conflicts of interest arising from vertical integration (structural separation is also discussed in Section 5.1.1).

5.2.5. United States

The Stigler report, which was concerned with digital platforms more broadly, made a number of recommendations that could potentially help to address some of the concerns that have been raised in relation to digital advertising markets (Stigler Committee, 2019[162]). For example, it recommended:

- Network effects that are present in some of the key digital platforms could somewhat be addressed through "forced interoperability".
- Merger thresholds should be revisited for dominant digital platforms where turnover alone may not identify all potentially anticompetitive mergers. There should also be consideration given to reversing the burden of proof for dominant platforms (see Box 8).
- The FTC should be able to access relevant data held by digital platforms.
- A Digital Authority, to oversee competition, privacy, consumer, and other policy areas related to digital platforms, should be established.
- A host of policy initiatives to address consumer protection concerns, concerns regarding political influence, and media diversity, among other issues.

Last, it does not rule out the consideration of fiduciary duties in the case of digital platforms that may have tipped to monopoly.

More recently, the US House of Representatives antitrust report on big tech has, alongside a range of other reforms including structural separation powers (see Section 5.1), recommended that (U.S. House of Representatives, 2020, p. 381[88]):

> *Congress consider establishing non-discrimination rules to ensure fair competition and to promote innovation online. Non-discrimination rules would require dominant platforms to offer equal terms for equal service and would apply to price as well as to terms of access*.

It also highlighted the importance of access to data, and recommended that the US Congress consider developing a framework for encouraging data interoperability and portability to promote competition by lowering entry barriers for competitors and switching costs by consumers. Further, it recommended that the US Congress consider prohibiting the abuse of superior bargaining power.

5.2.6. Other proposals

Srinivasan (2019[77]) has argued that digital advertising markets should be subject to the same types of regulation as applied in equities trading markets in the United States. In particular, she raises issues of discriminatory access to the marketplace, intermediary conflicts of interest, and opacity in digital advertising markets. To address these concerns, that have previously arisen in the financial services sector, she recommends:

- Exchanges must provide traders with equal access to the necessary data required to bid on exchanges (e.g., data on the consumer). In regard to user identity information, exchanges could be required to share that information (and any other relevant trading data) with all intermediaries operating on the exchange in a non-discriminatory manner.
- Exchanges must provide traders with fair access to the physical infrastructure required to achieve the necessary speed. That is, where exchanges permit co-location, there should be non-discriminatory and transparent pricing and terms of access. Further, exchanges could co-locate with intermediaries in neutral colocation facilities and increase disclosures around the bids that they exclude due to latency.
- As discussed in Section 5.1, in the case of dominant vertically integrated platforms, intermediary conflicts of interest should be managed, if not through conduct and disclosure rules, or “Chinese Walls”, then through structural separation. Regarding conduct and disclosure rules, ad trading intermediaries (i.e. ad servers and buying tools) might be prohibited from abusing their access to third parties’ sensitive information, be required to maintain “Chinese Walls” equivalents, and be prohibited from routing trading activity to their own exchange or websites in a discriminatory manner, for example.
- Fiduciary duties could apply to digital advertising intermediaries to revert ownership interests in ad server data back to publishers and advertisers, empowering them to share user IDs and other market and consumer data as they see fit.

5.3. Promoting greater transparency

Srinivasan (2019[77]) has also suggested transparency and disclosure rules could be introduced in digital advertising markets. Not only would these improve transparency, but they would also allow regulators to monitor how well advertising intermediaries are managing their conflicts of interest. Intermediaries could be required to disclose information about their trading activity (in milliseconds) and even synchronise business clocks with a universal clock to let others monitor whether they are properly managing their conflicts of interest (and not front-running).

As part of its “Digital Services Act package”, the European Commission (2020[155]) is considering a range of options. One of these focused on the introduction of a new a dedicated regulatory body with powers to collect information from relevant platforms to enhance transparency and monitoring efforts. To the extent that the larger players in digital advertising markets were captured by such a requirement, this could certainly improve transparency in these markets, at least from the perspective of the regulator.

In addition to the above, market monitoring, through the use of market studies, and by the various dedicated digital markets units that have been recommended or established in a number of countries,

including in the United Kingdom (Furman et al., 2019[161]), the United States (Stigler Committee, 2019[162]), in France (Craig, 2020[170]), and in Australia (ACCC, 2019[94]), remains an option for monitoring how competition in digital advertising markets develops. Indeed, several market studies have already been undertaken in multiple jurisdictions (see Box 4), and the ACCC is currently completing another such study into digital advertising (ACCC, 2020[171]).

5.4. Co-ordination across policy areas and borders

The need for co-operation and co-ordination across agencies when issues span multiple policy domains has been discussed in multiple OECD reports (OECD, 2018[172]; OECD, 2020[3]). Policy areas particularly relevant to digital advertising markets include competition, consumer and data protection and privacy. In addition, issues relating to the provision of and remuneration of news media content may also be relevant.[34]

Co-operation across competition, consumer and privacy domains was a central theme of the EDPS's 2014 "Preliminary opinion on privacy and competitiveness in the age of big data" and its 2016 "Opinion on coherent enforcement of fundamental rights in the age of big data" (EDPS, 2014[173]; EDPS, 2016[174]). This latter opinion recommended a closer dialogue between regulators and experts across policy boundaries, with the goal of strengthening competition and consumer protection enforcement and stimulating the market for privacy-enhancing services. Kerber (2016[175]) went further, arguing for the development of a "common strategy" across these three policy areas.

In respect of co-ordinating competition and consumer policy issues and enforcement, this is more straightforward in the 30 plus jurisdictions that have these responsibilities tasked to one common agency (Kovacic and Hyman, 2013[176]). In addition, legislative provisions can provide the legal basis for co-operation between competition, data protection and consumer authorities. In Germany, for example, amendments to the *Act Against Restraints on Competition*, which came into force in June 2017, provide for this (Stauber, 2019[177]). In particular, under s. 50c(1), Federal and state competition and data protection authorities can exchange information, including personal data and operating and business secrets, to the extent that this is necessary for the performance of their respective functions, and use such information in their proceedings. Less formal means of co-operating are also available. For example, the EDPS's 2016 opinion recommended that a "Digital Clearinghouse" be created to facilitate information sharing between regulators relating to possible violations in online markets (see Box 9).

In addition, a number of recent reviews into the digital economy have recommended a new "digital regulator" of some form or another, to look at competition and other issues that arise in relation to online platforms, which would include those platforms most active in digital advertising markets (ACCC, 2019[93]; Furman et al., 2019[161]; Stigler Committee, 2019[162]). A digital platforms branch has since been set up in Australia, as part of the ACCC (ACCC, 2020[181]) and a digital platforms taskforce has been assembled in the United Kingdom (UK Government, 2020[169]). The UK taskforce provides a particularly useful example for how cross-policy issues can be addressed. The taskforce is housed within the CMA, headed by a senior CMA official, and comprises staff from the CMA, the Office of Communications (Ofcom), and the Information Commissioner's Office (ICO) (UK Government, 2020[169]). This is a practical example of how a dedicated group of people with a diverse range of experience can address a wider range of policy issues. In addition, these three agencies have signed Memorandum of Understanding to guide their working arrangements (ICO, n.d.[182]; UK Government, 2014[183]).

Box 9. Europe's Digital Clearinghouse

In 2016, the EDPS published an "Opinion on coherent enforcement of fundamental rights in the age of big data", which recommended establishing a "Digital Clearinghouse" to coordinate enforcement across Europe's digital sector. It was envisioned that the Digital Clearinghouse would be a voluntary network of regulators involved in the enforcement of legal regimes in digital markets, with a focus on data protection, consumer and competition laws. In a 2017 Resolution, the European Parliament endorsed the establishment and development of the Digital Clearinghouse as envisioned by the EDPS, to "*help deepen the synergies*" and safeguard "*the rights and interests of individual*s".

The objectives of the Digital Clearinghouse are to (i) exchange best practices and novel ideas about how to protect individuals in digital markets across legal regimes, and (ii) bring together different stakeholders involved in this challenge. The EDPS hosted four meetings of the Digital Clearinghouse between 2017 and 2018, and from 2019, the Digital Clearinghouse has been jointly hosted by the Research Centre in Information, Law and Society at the University of Namur, the Tilburg Institute for Law, Technology, and Society at Tilburg University, and the European Policy Centre in Brussels. While it is a European initiative, all regulators in the digital space from across the globe are welcome to participate.

Sources: Adapted from OECD (2020[2]), and referencing: Digital Clearinghouse (n.d.[178]); EDPS (2016[174]); European Parliament (2017[179]); EDPS (n.d.[180]).

Given the international reach of many of the larger players in digital advertising markets, this will increasingly be an area which requires international co-operation and co-ordination. In the context of digital markets more broadly, the G7 has noted (G7, 2019, pp. 8-9[184]):

> *There is a growing need for convergent competition enforcement and for effective answers to cross-border practices and multijurisdictional cases. International cooperation helps foster a coherent competition landscape, which is also of interest for business stakeholders.*
>
> *Competition enforcers therefore support continued cooperation and experience sharing through existing fora and networks, as digital issues are already subject to work conducted by competition authorities at the multilateral level …*
>
> *The development of common understanding and closer cross-border cooperation in the detection and investigation of anticompetitive behaviours and concentrations could help increase the efficiency of competition authorities.*

At a practical level, initiatives such as the Multilateral Mutual Assistance and Cooperation Framework for Competition Authorities that has recently been signed between competition agencies in Australia, Canada, New Zealand, the United Kingdom and the United States, provide a framework for such co-operation (FTC, 2020[185]). On the topic of international co-operation, the OECD is currently undertaking joint work with the International Competition Network to identify current barriers to co-operation, and potential ways to improve international co-operation.

6 Conclusions

Numerous jurisdictions have now undertaken market studies, not to mention enforcement cases, in digital advertising supply chains. The findings from these studies have been relatively consistent, and have included such observations as:

- Digital advertising markets are **complex**. There are many levels in the supply chain, multiple actors, and the auctions underlying programmatic advertising are difficult to understand. Smaller advertisers, not to mention consumers, are likely to face difficulties in understanding how digital advertising markets work.
- There is a **lack of transparency** in digital advertising markets. This applies not only to the price paid to the various intermediaries along the ad tech stack, but also the rules underpinning the auctions, and the roles and responsibilities of the various actors.
- **Data** is an important input to programmatic advertising, especially digital display advertising. Businesses with many consumer facing applications, and access to third-party data, are able to collect stores of consumer data, which are particularly valuable in digital advertising markets. Restrictions on data interoperability or sharing, may inhibit competition.
- **Market power** appears to be an issue in at least some digital advertising markets. Market power is likely the result of both structural market factors and conduct. In particular, economies of scale and scope, network effects and access to data are likely to push towards consolidation. However, certain acquisitions, as well as certain forms of conduct, may have led to greater market consolidation and vertical integration.
- There are potentially some issues regarding competition in digital advertising including:
  - **Conflicts of interest** when platforms operate at all levels of the ad tech supply chain.
  - **Self-preferencing** regarding market arrangements that give digital advertising platforms an advantage in respect of data, speed and access to the auction, all of which potentially raise rivals' costs.
  - **Leveraging** of a platforms' market power on one side of the digital advertising market, into other parts of the digital advertising supply chain.
  - **Data practices** of consumer-facing platforms, which lead consumers to part with data that they might not realise they are sharing or might not understand the worth of, or how it will be used.
  - **Market opacity**, giving (dominant) platforms the ability to create market distortions at multiple points in the supply chain.

Many jurisdictions and commentators are already considering ways to address some of the issues that are raised by the digital economy more generally. In many cases these proposals get to the heart of some of the potential issues identified in digital advertising markets.

While many jurisdictions believe competition law is flexible enough to deal with most issues, some jurisdictions are considering **competition law amendments** to protect businesses who rely on significant platform intermediaries, and to introduce new powers for competition agencies to prohibit certain conduct by the most powerful platforms. In addition, some are considering **tweaks to merger laws**, including reversing the burden of proof when it comes to acquisitions by certain dominant businesses. Other

jurisdictions are forming **dedicated digital platform units** to better understand the competition issues in digital advertising markets, among other platform markets.

A raft of new ex ante regulatory options are also being considered. One option is to introduce **new rules** that specifically prohibit or manage some of the issues prevalent in digital advertising markets such as regarding conflicts of interest, self-preferencing conduct, data interoperability and sharing, and market transparency. Another option would be to broaden the scope for competition agencies to impose **structural or behavioural remedies** when competition issues are identified that do not necessarily amount to a competition law infringement. **Codes of conduct** have also been recommended as a possible solution to competition issues identified in digital advertising markets. Last, **structural separation** has been considered by some as a way to remove current conflicts of interest.

In considering such solutions, it will be important to consider any possible **unintended consequences**, such as undermining procompetitive digital business models that rely on digital advertising as a main or significant source of revenue. It will also be important to ensure that related policy experts, such as from data protection and privacy agencies, and consumer protection agencies, are involved to ensure there are no unintended consequences in these adjacent policy spheres. Last, given the international reach of digital advertising markets, it is an area that could benefit from stronger international co-operation both in respect of enforcement activity and policy development.

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Endnotes

[1] To give an idea of the importance of advertising to some of the biggest tech companies, advertising is Google's primary revenue source, accounting for USD 134.81 billion in 2019 (70.9% of Google's total revenue) (Clement, 2020[198]).

[2] For example, Facebook collects some 98 personal data points for each of its 2.6 billion users (Quick, 2020[13]; Clement, 2020[72]). It has also been estimated that Google collects enough personal data from each of its users to fill over half a million sheets of paper each year (Ellery, Bucks and Hurfurt, 2018[192]).

[3] Retargeting occurs when a consumer starts seeing advertising for a particular product or service on numerous sites and apps across the web. Consumers can feel like the product or service is "following them" around the Internet. Retargeting can take various forms and can be based on different information, such as search activities, responses to digital ads, responses to email advertisements, and "clicks", for example.

[4] Examples include Google, Bing, Yahoo and DuckDuckGo.

[5] For example, Expedia for travel, bookings.com for hotels, and Amazon.com for shopping.

[6] "Organic" search results are the results returned by the search engine's algorithm based on a consumer's query.

[7] Advertisers can choose whether to set their bid manually or automatically.

[8] Of these, Facebook is by far the largest; its advertising revenue amounted to almost USD 7 billion in 2019 (Clement, 2020[191]). TikTok is growing quickly to rival the user base of the more established social networks, though much of its user base is currently in China.

[9] Examples include Google's AdSense (for search advertising), the Google Display Network (GDN), Apple's "Search Ads" (for the Apple app store), and the Facebook Audience Network.

[10] Examples of SSPs include, Google's Ad exchange (Google Ad Manager), AppNexus, PubMatic, and One by AOL (Geradin and Katsifis, 2019[36]).

[11] Thus avoiding the need to change the HTML of the webpage and facilitating dynamic digital ads that change in real time according to the individual viewing the ad.

[12] Examples of PAS include Google's "Google Ad Manager" (previously DoubleClick for Publishers (DFP) and AdX), OpenX and AdZerk (Geradin and Katsifis, 2019[36]).

[13] If the advertiser chooses Google Ads, for example, this will involve Google bidding and buying ad space, including on its own exchange, potentially for advertising space on its own network (e.g. Google search or YouTube).

[14] Examples of DSPs include Google Marketing Platform (previously Google's DoubleClick Bid Manager, but now an integrated DSP and advertiser ad server, see below), DataXu, MediaMath, and Amazon DSP (Geradin and Katsifis, 2019[36]).

[15] An example is the Google Marketing Platform (previously DoubleClick Campaign Manager).

[16] Examples of DMPs include BlueKai (Oracle), Weborama and Adobe Audience Manager.

[17] Examples of ad exchanges are Google Ad Manager (previously AdX, or DoubleClick's ad exchange), AppNexus, The Rubicon Project, OpenX, and One by AOL (some of these players also offer SSP services, as mentioned above) (Geradin and Katsifis, 2019[36]).

[18] In 2009, Google introduced “dynamic allocation” which allowed its exchange to bid on an impression in real time in competition with the historical bids of competing exchanges.

[19] For example, Google announced that it would move to “exchange bidding” in 2016, and this was generally available to publishers in 2018 (Geradin and Katsifis, 2019[92]; Google, n.d.[195]). It was later renamed “open bidding”. This allowed multiple exchanges to bid on Google’s inventory at the same time as Google’s ad exchange. In practice, this involved multiple sequential auctions (first at the ad network level, then the DSP, then on the exchange), the first two were second price auctions, and the last was a first-price auction. According to some commentator, the use of multiple second-price auctions introduced the potential for arbitrage (Scott Morton and Dinielli, 2020[58]).

[20] Google chose not to participate in header bidding (CMA, 2020, p. M9[76]). If a publisher used Google to sell ad inventory (and also used header bidding), the winning bid from the header bidding auction was sent to Google, allowing it to take a “last look” at the header bidding auction and choose whether or not to participate in the auction (Geradin and Katsifis, 2019[92]). However, compared with earlier auction rules, header bidding did mean than Google faced greater real time competition from other exchanges.

[21] For example, Google charges publishers between 5 and 10% of the winner’s bid for using other exchanges, alongside Google’s exchange in the case of Google’s “unified auction” (Scott Morton and Dinielli, 2020[58]).

[22] Scott-Morton and Dinielli (2020[58]) provide an example of how Google’s previous auction rules, which involved multiple second-price auctions, provided at least a theoretical potential for arbitrage. Google Ads used to conduct a second-price auction among its advertising customers. It then took the winning bid (being the price bid by the second highest bidder), for example USD 10, to a second second-price auction with rival DSPs. If competition in the second auction was lower, yielding a second highest bid of USD 5, Google could theoretically take the USD 10, and only pay out USD 5, netting USD 5.

[23] However, some new entrants have seemingly overcome this barrier to entry.

[24] Even in such circumstances, if an advertiser or publisher has incurred sunk costs in contracting with a particular intermediary, there is the risk that such costs could be expropriated by the intermediary, which could undermine incentives to invest in the first place (Biggar and Heimler, 2020[196]).

[25] Namely, Google and Facebook.

[26] However, since advertising serves the purpose of gaining customers from competitors it is highly unlikely that a cartelized industry would engage heavily in advertising.

[27] In 2009, following its acquisition of DoubleClick, it is claimed that Google started to encrypt (or “hash”) the user IDs for other exchanges while allowing its own exchange and buying tools to access them by default (Srinivasan, 2019[77]). Other contractual and technological barriers to data interoperability have been identified by Geradin and Katsifis (2019[92]) and Srinivasan (2019[77]). Scott Morton and Dinielli (2020[58]) and Srinivasan (2019[77]) also raise concerns that Google’s plan to block third-party cookies on its Chrome browser in the next two years is another way for Google to maintain a competitive advantage when it comes to consumer data by locking out third-parties from collecting this consumer information.

[28] See, for example, Geradin and Katsifis (Geradin and Katsifis, 2019[92]).

[29] For example, some commentators claim that Google has designed its ad networks to encourage advertisers to sign up to both search and display advertising (Scott Morton and Dinielli, 2020[58]). To register with Google Ads (for digital display advertising), advertisers first have to start and fund a Google Search campaign (for search advertising), whether or not they wish to advertise on Google Search (Srinivasan, 2019[77]).

[30] For example, Yahoo and Microsoft (i.e. Bing).

[31] These powers are provided under the *Enterprise Act 2002*, and its amendments in the *Enterprise and Regulatory Reform Act 2013*.

[32] The draft bill includes factors for the competition authority to consider in determining whether a company has paramount cross-market relevance, and notes that upon finding a company has paramount cross-market relevance, it may prohibit certain conduct including: i) self-favouring, ii) impeding competitors by leveraging market power, iii) using

third-party data to create barriers to entry, iv) hindering interoperability and data portability, v) providing insufficient information about performance for customers (Höppner, 2020[158]).

[33] The Autorité de la concurrence (2020[159]) recommended identifying “structuring digital platforms” based on the following definition:

A company that provides online intermediation services for exchanging, buying or selling goods, content or services, and

Who holds structural market power

because of its size, financial capacity, user community and/or the data that it holds,

enabling it to control access to or significantly affect the functioning of the market(s) in which it operates,

with regard to its competitors, users and/or third-party companies that depend on access to the services it offers for their own economic activity.

[34] The ACCC is currently looking into this issue through the development of a media code of conduct, for example (ACCC, 2020[193]; ACCC, 2020[194]).

www.oecd.org/competition