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### **Google's Anticompetitive Practices in Mobile: Creating Monopolies to Sustain a Monopoly**

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## I. Introduction

Google is the world's dominant search engine, and it has enjoyed this dominance since the early 2000s. The firm opened its doors in 1998, and by 2002, Google had become the leading search engine in the United States.<sup>1</sup> That same year the American Dialect Society deemed the phrase "to google" the most useful of the year.<sup>2</sup> While other internet giants of the 1990s, including Yahoo!, AOL, and Netscape, faded, Google's reign continues. Today, more than nine out of ten internet searches conducted worldwide are run through Google.<sup>3</sup>

Yet Google Search's dominance, now stretching into its third decade, was not inevitable. In the mid-2000s, the development of mobile technology posed an existential threat to Google's business model. Google Search was first developed in an environment where the personal computer was the internet's only entry point. In the mid-2000s, however, smartphones and early tablets provided increasing mobile internet access. Google recognized the risks associated with this shift as early as 2007, when it noted:

If we are unable to attract and retain a substantial number of alternative device users to our web search services or if we are slow to develop products and technologies that are more compatible with non-PC communications devices, we will fail to capture a significant share of an increasingly important portion of the market for online services, which could adversely affect our business.<sup>4</sup>

The company was concerned that device owners would use mobile applications (apps) and other mobile services rather than web browsers to conduct searches. If users accessed web content through these alternative channels, they might bypass Google Search, thus shrinking Google's control of the market.<sup>5</sup>

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<sup>1</sup> Rufus Pollock, *Search Engine Market Shares*, DATAHUB, <https://datahub.io/rufuspollock/search-engine-market-shares>.

<sup>2</sup> *2002 Words of the Year*, AM. DIALECT SOC'Y (Jan. 13, 2003), [https://www.americandialect.org/2002\\_words\\_of\\_the\\_year](https://www.americandialect.org/2002_words_of_the_year).

<sup>3</sup> See, e.g., *Search Engine Market Share Worldwide: Mar 2019–Mar 2020*, STATSCOUNTER, <https://gs.statcounter.com/search-engine-market-share>.

<sup>4</sup> Google, Inc. Annual Report (Form 10-K) (Feb. 23, 2007).

<sup>5</sup> Google acknowledged this risk in their 2012 10-K statement. See Google, Inc. Annual Report (Form 10-K) (Jan. 23, 2013) ("[S]earch queries are increasingly being undertaken via 'apps' tailored to particular devices or social media platforms, which could affect our share of the search market over time.").

In addition to these risks, the shift to mobile also presented Google with the opportunity to capitalize on the potential for increased access to the internet and the surge of user data that would result from innovations in mobile technology. The opportunity to collect users' location data was of particular interest to Google. As Eric Schmidt, Google's then CEO, explained in an article entitled *Preparing for the Big Mobile Revolution*, Google recognized that by shifting its focus to the mobile industry, it could potentially collect valuable user data from the smart mobile devices and provide personalized information to enhance its business model.<sup>6</sup> These opportunities and risks provided Google with a business imperative to capitalize on the mobile revolution.

This paper explains how Google went about maintaining and extending its monopoly of the search engine market by exploiting the mobile revolution. We investigate how, in the wake of the mobile revolution, Google strategically transformed itself into a “mobile first”<sup>7</sup> company and how those actions harmed—and continue to harm—competition and consumers. As we show, Google used four main tactics to successfully entrench its monopoly as the world shifted to mobile. First, Google leveraged the monopoly power of several of its mobile apps, most notably the Google Play app store, to foreclose competition from alternative licensed mobile operating systems (OS), giving Android a monopoly.<sup>8</sup> Second, the firm used its dual Android and Google Play monopolies to force device manufacturers (in industry jargon, original equipment manufacturers, or OEMs) to set Google Search as their phones' default search option. Third, Google engaged in exclusive contracts with Apple and other OEMs to foreclose almost the entire rest of the mobile search market. Finally, Google has bought threats to important links in this chain, preventing competitors from acquiring so much as a toehold in

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<sup>6</sup> Eric Schmidt, *Preparing for the Big Mobile Revolution*, HARV. BUS. REV. (Jan.-Feb. 2011).

<sup>7</sup> Jim Edwards, *3 Google Execs Just Admitted Google's Desktop Business Will Soon Be an Afterthought*, BUS. INSIDER (Nov. 9, 2012), <https://www.businessinsider.com/a-majority-of-googles-business-will-be-mobile-in-2013-2012-11>.

<sup>8</sup> See *infra* Section II.

search. Here, we use Google's acquisition of Waze as a case study of its pattern of anticompetitive acquisitions.

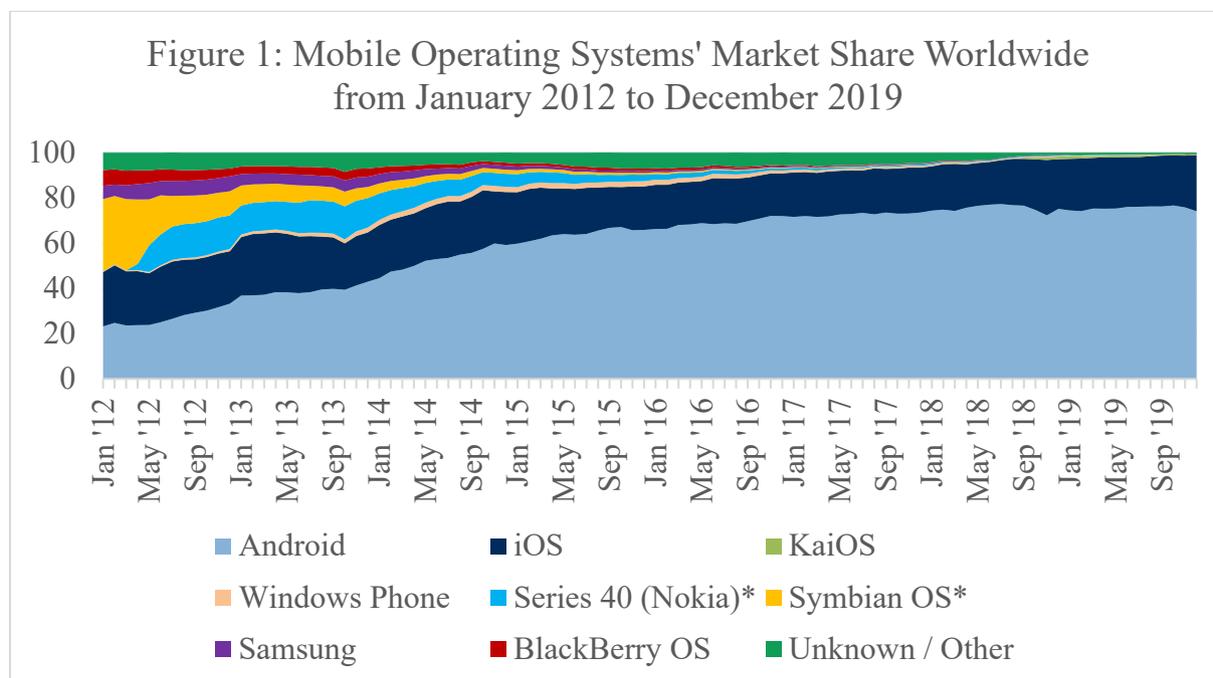
From the perspectives of competition and the consumer, Google created a vicious cycle. The company leveraged its initial market power from one market to the next, spawning new monopolies and foreclosing competition in the markets for licensable smartphone operating systems, search engines, and other essential apps. It further entrenched its market power by striking exclusive contracts with OEMs and acquiring key competitors. Google did this all in the service of maintaining its monopoly over the search engine market. As we show, Google's monopolization of these markets has harmed end consumers by raising prices, lowering quality, and reducing invention. In sum, Google used anticompetitive practices to create monopolies in a variety of mobile products in order to sustain its monopoly of the search engine market.

This paper proceeds as follows. We begin, in Section II, by analyzing Google's creation and maintenance of its Android operating system monopoly and its use of tying arrangements to entrench its market power in essential apps and internet search. In Section III, we discuss Google's exclusive contracts with OEMs such as Apple. In Section IV, we turn to Google's acquisition of Waze. In Section V, we describe how these practices increase prices, reduce quality, and reduce innovation. Finally, in Sections VI and VII, respectively, we consider counterarguments and provide a brief legal analysis of the theories of harm laid out throughout the paper.

## **II. The Vicious Circle: Google's Creation and Maintenance of its Android Monopoly**

The first step in Google's mobile strategy was to develop a mobile operating system. In 2005, Google acquired Android, Inc., the start-up that developed Google's eponymous mobile operating system. Since its launch in 2007, the Android operating system has achieved tremendous commercial success. Android has been the market leader in mobile operating

systems worldwide since 2011, and it currently has a 74 percent market share of all mobile operating systems.<sup>9</sup>



Just as importantly, Android controls virtually 100 percent of the licensable mobile operating system market. Unlike Apple’s iOS, Android is licensable; the operating system is not used exclusively with Google mobile devices. Instead, any OEM that accepts Google’s terms can use Android as its devices’ operating system. OEMs can access Android’s source code and either use it on their mobile devices as is or create modified versions of the operating system, called Android forks.<sup>10</sup> Google makes Android available for free—at least nominally—through the Android Open Source Project (AOSP).

Android’s dominance is neither an accident nor the result of competition on the merits. Instead, Google exploited its early meritorious development of Android and its app suite, especially Google Play, to anticompetitively entrench Android as the dominant licensable smartphone OS. Through a series of anticompetitive contracts, discussed in detail below, Google locked the OEMs into its Android fork and Google app store—and locked potential

<sup>9</sup> *Mobile Operating Systems’ Market Share Worldwide from January 2012 to December 2019*, STATISTA, <https://www.statista.com/statistics/272698/global-market-share-held-by-mobile-operating-systems-since-2009/>.

<sup>10</sup> Case AT.40099 Google Android, Article 7 Regulation (EC) 1/2003, 40 (2018), ¶ 124 [hereinafter *Google EU Case*].

competitors out. This in turn has been the key to Google's creation and maintenance of its mobile search monopoly.

*A. The Relationship Between Android and Google Search*

Android was crucial to the expansion of Google Search's monopoly to the mobile environment in two main ways.

First, Google collects user data via the proprietary applications that come pre-installed with Android through its software package, Google Mobile Services (GMS). On Android 10, these apps include Google Play Store, Google Search, Google Chrome, Gmail, Google Maps, and YouTube, among others. Google also requires GMS Android products to come pre-installed with services that run in the background, such as Google's Network Location Provider, an app that tracks users' geographic location, and Client ID, a coding system that tracks usage of Google's applications.<sup>11</sup> Together these applications and services allow Google to collect a wide range of user data, such as user contact information, demographic information, location information, and transactional records. Google uses this user data both as information to feed into its search and advertising business as well as to fine tune its search and advertising algorithms. This data both makes Google's advertising more valuable and presents a data barrier for firms looking to challenge Google's search monopoly—a barrier that is virtually insurmountable because of Google's economies of scale.

Second, Android drives increased use of Google Search because Google requires manufacturers to set it as the default search service. Google Search is the default search engine whenever consumers use the search bar on any Android mobile web browser—including Chrome, Firefox, or Opera.<sup>12</sup> As discussed further below, default settings have a strong effect on consumer behavior, which contributes to Google's controlling market share of mobile searches in the United States.

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<sup>11</sup> Kyle Bradshaw, *Here are the default Google apps for Android 10, Android Go*, 9TO5GOOGLE.COM (Oct. 7, 2019), <https://9to5google.com/2019/10/07/default-apps-android-10-android-go/>.

<sup>12</sup> *Google EU Case*, *supra* note 10, at ¶ 185.

## B. *Contractual Restrictions to Android Usage*

Google achieves these outcomes by using its market power to contractually restrict OEMs that adopt GSM Android. Google nominally makes the source code of Android available for free via the AOSP under an open-source license.<sup>13</sup> However, an AOSP license does not grant OEMs the right to distribute any of Google’s proprietary apps or to use the Android logo and other related trademarks.<sup>14</sup> In order for manufacturers to obtain those rights, Google requires OEMs to enter into interlocking agreements known as Anti-fragmentation Agreements (AFAs) and Mobile Application Distribution Agreements (MADAs).

### 1. *Anti-Fragmentation Agreements*

Google’s AFAs detail the anti-fragmentation obligations by which manufacturers must abide to distribute devices with GMS applications pre-installed. Android fragmentation, or forking, is the process by which an independent organization uses the bare, open-source portion of Android as base code to develop its own operating system. Google’s AFAs restrict a manufacturer’s ability to fork Android. For the purposes of this paper, we will refer to Google’s baseline non-forked version of Android as “GSM Android.”

The stated objective of Google’s AFAs is “to define a baseline implementation of Android that is compatible with third-party apps written by developers.”<sup>15</sup> In its internal documents, Google states that AFAs are meant to “[s]top . . . our partners and competitors from forking Android and going alone.”<sup>16</sup> In other words, OEMs that want to pre-install any Google app are bound not only to shipping GSM Android-compatible devices, they commit not to distribute any “incompatible” devices.<sup>17</sup>

The specific provisions of Google’s AFAs are largely confidential. However, excerpts of these contracts have been released via the European Commission’s 2018 judgment against

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<sup>13</sup> Kent Walker, *Android’s Model of Open Innovation*, GOOGLE EUROPE BLOG (Apr. 20, 2016), <https://blog.google/topics/google-europe/androids-model-of-open-innovation/>.

<sup>14</sup> *Google EU Case*, *supra* note 10, at ¶ 156.

<sup>15</sup> *Id.* at ¶ 159.

<sup>16</sup> *Id.* at ¶ 160.

<sup>17</sup> *Id.*

Google Android.<sup>18</sup> Pursuant to an AFA, device manufacturers may “only distribute Products that are either: (i) in the case of hardware, [GSM] Android Compatible Devices; or (ii) in the case of software, distributed solely on [GSM] Android Compatible Devices.”<sup>19</sup> Additionally, device manufacturers may “not take any actions that may cause or result in the fragmentation of Android.”<sup>20</sup> Finally, device manufacturers cannot participate in the creation of, assist in the distribution of, or in any way promote a Software Development Kit for the development of forked applications.<sup>21</sup> The upshot of Google’s AFA requirements is that, if an OEM signs an AFA, it may not distribute a single non-GMS version of Android, and it cannot even work on forked applications for the future.<sup>22</sup>

As discussed in greater detail below, AFAs are classic examples of anticompetitive covenants not to compete. AFAs prevent OEMs, Google’s greatest horizontal threat in the mobile operating system market, from developing competing versions of Android. Any OEM that might want to enter the mobile operating system market—whether to create a competing app store, to give its customers greater privacy control, or for some other reason—is barred from doing so. Because the only game in town is GSM Android, OEMs have to sign an AFA, and the AFAs in turn ensure that GSM Android will continue to be the only game in town.<sup>23</sup>

## 2. *Mobile Application Distribution Agreements*

Google’s MADAs dictate the terms by which OEMs can install the GSM suite. Like AFAs, MADAs are confidential, and their terms appear to be tailored to each manufacturer. Nevertheless, several MADAs (for example, between Google and HTC, as well as between

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<sup>18</sup> Many of the contractual details presented here regarding Google’s AFAs and MADAs were gathered from the European Commission’s 2018 opinion in its Google Android investigation. The AFAs and MADAs represented therein largely date from 2016. Google has since altered the AFAs and MADAs used in the European Union pursuant to the European Commission’s judgment. However, there is no indication that Google has substantially altered its AFAs and MADAs in North America.

<sup>19</sup> *Google EU Case*, *supra* note 10, at ¶ 157.

<sup>20</sup> *Id.*

<sup>21</sup> *Id.*

<sup>22</sup> Benjamin Edelman & Damien Geradin, *Android and Competition Law: Exploring and Assessing Google’s Practices in Mobile*, 12 EURO. COMPETITION J. 159, 176 (2016) (“[A] carrier cannot accept the AFA as to some of its devices, but retain the right to distribute other devices that violate AFA.”).

<sup>23</sup> *Id.* at 176-77.

Google and Samsung) that have been made public through litigation show several common features.<sup>24</sup>

Under these agreements, manufacturers must abide by a series of highly restrictive rules, including:

1. Taking the package all-or-nothing: if an OEM wishes to pre-install one Google app, it must pre-install all GMS apps;<sup>25</sup>
2. OEMs must follow Google’s directions on the display and placement of Google applications on Android devices. Device manufacturers must place the Google Search and the Play Store applications, as well as a folder labelled “Google,” on their devices’ default home screen.<sup>26</sup> Other pre-installed Google applications cannot be placed “more than one level below the home screen,” and some MADAs even dictate the precise order, from left to right and top to bottom, in which the application icons should appear on the home screen;<sup>27</sup>
3. OEMs must pre-install Google’s Network Location Provider and Client ID services;<sup>28</sup>
4. OEMs must set Google Search as the default option for all web search options;<sup>29</sup>  
and

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<sup>24</sup> See *Oracle America Inc. v. Google*, 872 F.Supp.2d 974 (N.D. Cal., 2012) for MADA exhibits. Notably, because Samsung is the largest smartphone OEM in the world by volume, its MADA with Google should show Google’s leverage at its weakest. Yet Google seems to be able to dictate terms.

<sup>25</sup> Edelman & Geradin, *supra* note 22, at 171.

<sup>26</sup> For example, a recent MADA entered into between Google and an OEM determined that the Google folder should include Google Chrome, Gmail, Google+, Google Maps, Google Play Music, Google Play Movies, Google Play Books, Google Play Newsstand, Google Play Games, Google Drive, YouTube, Google Plus Photos, and Hangouts. *Google EU Case*, *supra* note 10, at ¶ 184 n.173.

<sup>27</sup> Edelman & Geradin, *supra* note 22, at 165.

<sup>28</sup> *Google EU Case*, *supra* note 10, at ¶ 187.

<sup>29</sup> *Id.* at ¶ 185. Google Search seems to have benefitted disproportionately from its pre-installation on a large number of smart mobile devices because other viable competitors exist but are severely disadvantaged by Google Search’s default status and users’ concomitant deference to the default. See, e.g., Edelman & Geradin, *supra* note 22, at 172; *Google EU Case*, *supra* note 10, at ¶ 830 (“[T]he MADA prevents OEMs from pre-installing exclusively a competing general search app on their Google Android devices.”).

5. OEMs must ensure that Google Search is easily accessible through several prespecified features.<sup>30</sup>

MADAs typically last up to five years and are interlocking with AFAs. That is, in order to enter into a MADA, an OEM must enter into and abide by the terms of an AFA.<sup>31</sup> Over time, the number of Google applications mandated by MADA contracts has increased, from the pre-installation of twelve Google apps in 2009 to the pre-installation of thirty Google apps in 2014.<sup>32</sup> The number of MADA contracts has also increased dramatically between March 2009 and April 2017, during which time Google entered into MADAs with at least 200 additional OEMs.<sup>33</sup> Google's MADAs give it exorbitant control over OEMs: the contracts require that OEMs obtain Google's approval for each new device, but Google can withhold approval for unrelated matters and for an indeterminate period of time.<sup>34</sup>

MADAs accomplish several anticompetitive goals for Google, which we discuss in greater detail below. First, items 1 and 2 prevent OEMs from developing competing app stores because Google guarantees itself prominent real estate across all Android devices. Indirect network effects help ensure first-mover advantages: because Google Play was prominently available on all Android smartphones, it made sense for app developers to go there. With app developers going to Google Play, it made sense for app customers to go there as well. This started a feedback loop that ensured that Google Play was, and remained, the preeminent mobile app market.<sup>35</sup> MADA terms effectively prevent OEMs—the best-placed of Google's potential competitors—from disrupting that feedback loop and mounting a competing app store. Without an ability to compete with Google Play, OEMs are forced to accept GSM and

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<sup>30</sup> Google Search must be accessible either through “(a) long pressing the ‘Home’ button on Devices with physical navigation buttons, or (b) swiping up on either the navigation bar or ‘Home’ button on Devices with soft navigation buttons.” Edelman & Geradin, *supra* note 22, at 165.

<sup>31</sup> *Google EU Case*, *supra* note 10, at ¶ 739(2).

<sup>32</sup> *Id.* at ¶ 182.

<sup>33</sup> *Id.* at ¶ 189.

<sup>34</sup> Edelman & Geradin, *supra* note 22, at 178.

<sup>35</sup> See Ben Thompson, *Antitrust and Aggregation*, STRATECHERY (Apr. 26, 2016), <https://stratechery.com/2016/antitrust-and-aggregation/>.

the terms that come with it. Second, item 2 forecloses competition for several of Google's less-premier apps, such as Google Music, which many OEMs would likely drop from the bundle if not forced into an all-or-nothing deal. Third, Google leverages its power in the mobile operating system and app store markets to dictate items 3 through 5, foreclosing competition in the search market and entrenching its monopoly. We detail each of these steps in Google's Android strategy further in the below Section.

*C. Google's AFAs and MADAs Stifle Competition by Foreclosing Rivals*

The contractual restrictions imposed on OEMs through the AFAs and MADAs strengthen Google's dominant market position in the search engine market as well as in the markets for licensable mobile operating systems, Android app stores, and various other app services. For Google, these restrictions sustain its monopoly of the search engine market, driving increased use of Google Search and providing it with more valuable user data. By the same token, these restrictions all but foreclose competition. Google conditions manufacturers' use of the GSM package on their agreement not to compete in mobile operating systems and to comply with restrictions that make it difficult for them to compete with Google's app store or its essential apps. This forecloses Google's best-positioned potential rivals in those markets. It also prevents realistic challenges to Google's search dominance, because the best chance to topple Google's monopoly over mobile search would be through a rival mobile operating system.<sup>36</sup> Google's web of contracts cuts that competition off at the pass.

These anticompetitive effects are largely consequences of Google's product tying strategy. Product tying is an arrangement by which sellers make the purchase of one good or service contingent on the purchase of another, perhaps unrelated, good or service. Tying arrangements can cause consumer harm when monopolists use them to gain sales in markets where they are not dominant. As Judge Posner said, "[t]he traditional objection to tying

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<sup>36</sup> Google is able to prevent such competition from mobile search on Apple and other non-GSM operating systems through exclusive contracts. *See infra* Section III.

arrangements is that they enable a firm having a monopoly in one market to obtain a monopoly in a second one.”<sup>37</sup>

Google’s tying strategy is rooted in the dominance of several of its GMS apps, especially Google Play. The Play Store is the mobile application store through which Google distributes apps for Android devices. The store fulfills an essential function for device owners by providing a gateway to access other mobile apps: without it, mobile devices would lose much of their value to consumers. The Play Store is the most successful marketplace available on licensable smartphone operating systems by a number of measures. The Play Store has many more apps, app developers, monthly downloads, and active users than any of its competitors.<sup>38</sup> It also leads the market in sales.<sup>39</sup> Device manufacturers have acknowledged that it would “not be commercially feasible for an OEM to ship Android devices without Google Play pre-installed due to the variety and number of apps and contents available to users uniquely through the Google Play Store.”<sup>40</sup> The importance of the Play Store coupled with its market dominance makes it an ideal vehicle for product tying.

The same is true of YouTube. YouTube, Google’s video sharing and viewing platform, is an important source of entertainment for smartphone and tablet owners. It has the largest audience of all smartphone apps in the United States, and it is one of the most frequently used apps on mobile devices.<sup>41</sup> Like the Play Store, YouTube dominates its market. It has the largest user base, most usage, highest volume of video content, and the largest revenue of any video sharing and viewing platform by a wide margin.<sup>42</sup> Because of its uniquely large content library,

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<sup>37</sup> *Tying Arrangement*, BLACK’S LAW DICTIONARY (11th ed. 2019).

<sup>38</sup> *Google EU Case*, *supra* note 10, at ¶¶ 606-14.

<sup>39</sup> *Id.*

<sup>40</sup> *Id.* at ¶ 600.

<sup>41</sup> *Mobile Audience Reach of Leading Smartphone Apps in the United States as of October 2019*, STATISTA, <https://www.statista.com/statistics/281605/reach-of-leading-us-smartphone-apps/>.

<sup>42</sup> See Julia Alexander, *YouTube Is the Frontrunner in the Mobile Streaming Wars, and It’s Not Even Close*, THE VERGE (Feb. 13, 2020), <https://www.theverge.com/2020/2/13/21136335/youtube-streaming-wars-mobile-android-tiktok-netflix-quibi>; Edelman & Geradin, *supra* note 22, at 178.

few mobile device users would find a substitute to YouTube satisfactory, making it another attractive means of product tying for Google.<sup>43</sup>

As Benjamin Edelman and Damien Geradin argue, by tying to these products Google essentially leaves OEMs with only one option: OEMs must sign Google’s AFAs and MADAs if they hope to sell commercially viable products.<sup>44</sup> Without the AFAs or MADAs, OEMs can only manufacture “bare” Android devices, which are not permitted to include any Google applications, including apps without readily available alternatives, like the Play Store and YouTube.<sup>45</sup> By tying other products and services to such essential and dominant apps, Google enhances its market power to the detriment of competition and consumers.

### 1. *Tying Google Apps to GMS Android*

Google’s MADAs tie its apps to its GMS Android mobile operating system. Google bars OEMs from pre-installing any Google apps on a device other than a GSM Android phone.<sup>46</sup> It applies the same rules to alternative, non-Android operating systems.<sup>47</sup> Thus, when deciding which operating system to use on their devices, OEMs must choose between accepting the restrictions of Google’s MADAs and AFAs or foregoing the entire Android app ecosystems accessible through the Play Store, as well as important apps such as YouTube. This is exacerbated by Google’s revenue sharing agreements with several OEMs barring the manufacturers from pre-installing competing app stores.<sup>48</sup>

While consumers with bare Android devices or devices with alternative operating systems can “sideload” Google apps, this process is not a tenable alternative to pre-installing

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<sup>43</sup> Both the Google Play Store and YouTube operate based on two-sided market business models, in which end users are connected to content developers—application developers in the case of the Play Store and video developers in the case of YouTube—through Google’s platform. Two-sided business models exhibit indirect network effects. Massing both a sufficient developer base and user base, which are inextricably linked to one another, is a significant barrier to entry. *See* Org. for Econ. Cooperation and Dev., *Rethinking Antitrust Tools for Multi-Sided Platforms* 83 (2018), [www.oecd.org/competition/rethinking-antitrust-tools-for-multi-sided-platforms.html](http://www.oecd.org/competition/rethinking-antitrust-tools-for-multi-sided-platforms.html).

<sup>44</sup> Edelman & Geradin, *supra* note 22, at 160.

<sup>45</sup> *Id.* at 165.

<sup>46</sup> *See supra* notes 13-41 and accompanying text.

<sup>47</sup> Apple’s App Store is the only marketplace other than the Play Store on which Google apps can be downloaded and installed onto mobile devices. *See infra* Section III.

<sup>48</sup> *See infra* Section III.

the GMS suite. Sideloaded is the process by which end users of non-GMS Android devices can install Google apps onto their phones or tablets. Because Google does not distribute its mobile apps through the few alternative app stores that are available to bare Android devices, sideloading is the only way for such device owners to access Google apps.<sup>49</sup>

Sideloaded is a complex, multi-step process. For example, to sideload the Google Play Store, users must first lower the security standards on their devices to allow the installation of apps from unknown sources.<sup>50</sup> Second, users must navigate through their device settings to check their device's software version.<sup>51</sup> Third, users must connect their device to their computer using a USB connector.<sup>52</sup> Fourth, users must navigate through third-party websites to access and download the correct versions of four Android application packages (APKs): Google Account Manager, Google Services Framework, Google Play Services, and Google Play Store, in the order listed.<sup>53</sup> This step can be risky for users, because they have no way to confirm that the downloaded APK files are trustworthy. Fifth and finally, users must navigate to the downloaded APKs and install them onto their devices.<sup>54</sup> Each of these steps is complex, requiring multiple user actions. Additionally, this process voids the warranties of many mobile devices. As a result of this complexity and the risks to users' devices, sideloading is not a reasonable alternative to GMS-enabled Android devices.

Because Google apps cannot be readily sideloaded onto non-GMS-enabled devices, developers of bare Android or alternative operating systems must create a rival ecosystem of apps to compete with the GMS suit. However, Google's terms make this all but impossible for OEMs. Under Google's conditions, an OEM cannot sell its profitable, Google Play-equipped

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<sup>49</sup> See, e.g., *Amazon App Store vs. Google Play Store: What are the Differences*, BUS. OF APPS (Jan. 24, 2018), <https://www.businessofapps.com/news/amazon-app-store-vs-google-play-store-what-are-the-differences/>.

<sup>50</sup> See Cameron Faulkner, *How to Get Google Apps on an Amazon Fire Tablet*, THE VERGE (Jul. 8, 2019), <https://www.theverge.com/2019/7/8/20681267/amazon-fire-tablet-google-apps-gmail-maps-drive-play-store-how-to-get>.

<sup>51</sup> *Id.*

<sup>52</sup> *Id.*

<sup>53</sup> *Id.*

<sup>54</sup> *Id.*

phones while also selling another Android fork with a new app store.<sup>55</sup> OEMs' only option would be to build a competing app store from scratch without profitably selling smartphones in the meantime.<sup>56</sup> This constitutes a nearly-insurmountable barrier to entry.<sup>57</sup>

The difficulty of overcoming this barrier to entry is demonstrated by the experiences of the few manufacturers that have tried to sell bare Android devices. The example of the Nokia X operating system is notable. Introduced in 2014, the Nokia X platform was a forked Android operating system developed by Nokia for a new line of smartphones. This operating system provided several innovative features to consumers and developers, including low application cost maintenance and new in-app payment software.<sup>58</sup> Because Nokia X was based on bare Android, the operating system could not pre-install Google apps. Thus, Nokia developed an entire ecosystem of apps to replace Google's GMS suite, including the Nokia Store to replace the Play Store. Despite providing these alternative apps, Nokia faced poor reviews and customer complaints due to the lack of Google apps on Nokia X.<sup>59</sup> In response, Nokia introduced an update in September 2014 that allowed users to install Google Play and various other Google services through a method similar to the sideloading process described above.<sup>60</sup> Users criticized this process for its complexity and technical glitches.<sup>61</sup> Within a few months of its release, Nokia discontinued the phone.

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<sup>55</sup> Cf. Fiona M. Scott Morton & Zachary Abrahamson, *A Unifying Analytical Framework for Loyalty Rebates*, 81 ANTITRUST L.J. 777 (2017).

<sup>56</sup> See *Google EU Case*, *supra* note 10, at ¶ 576 (one Android competitor noting that "the effort to build something equivalent to GMS is huge, typically hundreds of development man years").

<sup>57</sup> For an example of the difficulties involved in installing an alternative app store on an Android device, see *Amazon App Store for Android*, AMAZON, <https://www.amazon.com/gp/feature.html?ie=UTF8&docId=1000626391>.

<sup>58</sup> See *Nokia X: Where Android Apps Will Thrive*, MICROSOFT DEVICES BLOG (Feb. 26, 2014), <https://blogs.windows.com/devices/2014/02/26/nokia-x-android-apps-will-thrive>.

<sup>59</sup> One reviewer explained that "Google has made its services a very large part of the Android ecosystem, and because of that, the Nokia X feels lacking." Aloysius Low, *Nokia X Review: This Isn't the Nokia Android Phone You Were Looking For*, CNET (Apr. 30, 2014), <https://www.cnet.com/reviews/nokia-x-review>.

<sup>60</sup> See Nayan, *Update: "Nokia X2 Tools" Allows Nokia X2 to Install Google Play Store & Google Services*, NOKIAPOWERUSER (Aug. 25, 2014), <https://nokiapoweruser.com/nokia-x2-tools-allows-nokiax2-to-install-google-play-store-google-services>.

<sup>61</sup> *Id.* (explaining that Nokia X devices can get "bricked," or go into an unresponsive state, if users incorrectly attempt to install Google applications).

The example of Nokia X illustrates how the tie between the GMS suite and Android harms mobile operating system developers, device manufacturers, and consumers. In a classic anticompetitive move, Google leverages its dominant position in one market to prevent competition in many others. Rather than competing on the merits of their differentiated operating systems, alternative operating system developers must spend significant resources to develop a suite of apps that competes with GMS. As has been discussed, such an effort requires significant investment, faces high barriers to entry, and has no assurance of commercial success. The case of Nokia X is typical of other bare Android and alternative operating system developers, which are “notable primarily for their failures.”<sup>62</sup> As a result, device manufacturers are left with little choice but to sign Google’s AFAs and MADAs and abide by their restrictions. Put differently, Google uses product tying to turn the dominance of the Play Store, YouTube, and other GMS apps into dominance in the operating system market.

Importantly for Google, this tying strategy forecloses competing search engine providers from developing mobile operating systems. Just as Nokia was unable to provide an alternative to Android, so too were competitors to Google in the search engine market, such as Microsoft. In fact, during the *Google v. Oracle* trial, Google revealed that the development of Android was in large part a response to Microsoft’s mobile products: “[A]t the time, we were quite concerned about Microsoft’s products. It’s hard to relate to that now, but at the time we were very concerned that Microsoft’s mobile strategy would be successful.”<sup>63</sup> The reason it is so difficult to relate today is because Google was successful in quashing the threat from Microsoft. Today, Microsoft’s Windows mobile operating system controls a paltry 0.26 percent of the mobile operating system market, leaving the spoils of the mobile revolution—user data—in the hands of Google.<sup>64</sup>

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<sup>62</sup> Edelman & Geradin, *supra* note 22, at 170.

<sup>63</sup> Dieter Bohn, *Android at 10: The World’s Most Dominant Technology*, THE VERGE (Sep. 26, 2018), <https://www.theverge.com/2018/9/26/17903788/google-android-history-dominance-marketshare-apple>.

<sup>64</sup> *Mobile Operating Systems’ Market Share*, *supra* note 9.

By providing Google with substantial amounts of user data and foreclosing competing search engines from that data, the dominance of the Android operating system in turn supports the dominance of Google Search. This tying strategy not only harms mobile operating system developers, device manufacturers, and competing search engine providers, but also deprives end consumers of the benefits of competition on the merits, including product innovations like those of the Nokia X.

## 2. *Tying GMS Android and Google Apps to Google Search*

Google's MADAs tie GMS apps to Google Search by conditioning GMS access on manufacturers setting Google search as the device default.<sup>65</sup> This means that when device owners use the search bar on any web browser, use their device's voice assistant feature to access the internet, or use any other means of internet search, their device must default to Google Search. As discussed above, because of Google's product tying, device manufacturers have little choice but to abide by these restrictions to provide commercially viable products to consumers.

Pre-installation and setting defaults have a profound effect on consumer behavior. As recent scholarship has shown, only a minority of consumers use more than one platform for many services—a behavior known as “multi-homing.” In fact, users tend to stick with default options “even when superior alternatives exist.”<sup>66</sup> Status quo bias has a significant effect on the market for search engines, as Maurice E. Stucke and Ariel Ezrachi argue, “the battle over search may soon become the battle over the default option, as inertia may trump quality differences among the search engines.”<sup>67</sup> This status quo bias is evident in the usage of Google on mobile devices as compared to personal computers. In 2016, Google Search had 86 percent of the global market share for general search services on mobile devices, while it only had a 64 percent market share on computers. Although consumer preferences might explain this

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<sup>65</sup> *Google EU Case*, *supra* note 10, at ¶ 185.

<sup>66</sup> Maurice E. Stucke & Ariel Ezrachi, *When Competition Fails to Optimize Quality: A Look at Search Engines*, 18 *YALE J. L. & TECH.* 70, 104 (2016).

<sup>67</sup> *Id.* at 105.

variance, “a likelier explanation is status quo bias, as Google is the default search engine for both the Apple and Android mobile operating systems.”<sup>68</sup>

Google itself has acknowledged the value of Google Search’s pre-installation and default setting, calling it “unquestionably valuable.”<sup>69</sup> The defaulting of Google Search is made all the more significant because users cannot uninstall the Google Search app on GMS devices.<sup>70</sup> In principle, competing search apps could pay device manufacturers to also pre-install their apps on the manufacturer’s mobile devices, although these apps could not be placed as the default option on the device. However, Google has foreclosed this option for many competitors through exclusivity arrangements, discussed below in Section III.

Together, these strategies ensured Google’s dominance in the mobile search engine market. The European Commission found that on mobile devices that did not have Google Search pre-installed and set as the default, Google Search accounted for a far smaller percentage of general search queries than on devices with Google Search pre-installed and set as the default.<sup>71</sup> This finding is confirmed by Google’s internal reports, which indicate that Google derives significantly more search revenue from devices with Google Search pre-installed and set as the default.<sup>72</sup>

Just as this strategy gave Google a competitive advantage, it prevents its rivals from competing on the merits. Other search engine providers cannot make their products the default search services on GMS-enabled devices—and as discussed below, Google has reached agreements with several OEMs to bar pre-installation of competing apps altogether.<sup>73</sup> Because of the significant effects of status quo bias, competitors will struggle to achieve traction with

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<sup>68</sup> *Id.*

<sup>69</sup> *Google EU Case*, *supra* note 10, at ¶ 780.

<sup>70</sup> *Id.* at ¶ 801.

<sup>71</sup> *Id.* at ¶ 792.

<sup>72</sup> *Id.* at ¶ 794.

<sup>73</sup> *See infra* Section III.

users in the mobile search market. The result in the data is clear: in the United States in January 2020, Google held more than 90 percent of the share of the mobile search engine market.<sup>74</sup>

### 3. *Tying GMS Apps Together*

Google's MADAs tie its GMS apps with one another. As previously discussed, mobile device manufacturers must download all GMS apps if they wish to have any at all. While some GMS apps, like the Play Store and YouTube, lack meaningful competitors, others do not. For example, Google Drive, a file storage and synchronization service, competes with Dropbox, Microsoft OneDrive, and numerous other services. Gmail, Google's email service, competes with Microsoft Outlook, Yahoo! Mail, and other email providers. Google's all-or-nothing approach to its GMS apps enhances its market position in these more competitive mobile app markets to the detriment of competition and consumers. The increased usage of these apps in turn provide Google with additional data that feed into its search-advertising business model and increase its competitive advantage over other rivals.

As discussed above, status quo bias gives pre-installed apps a significant competitive advantage over apps that have not been pre-installed. In the market for mobile apps, there is suggestive (though imperfect) evidence for this effect. One study shows that the usage of Google apps is consistently higher on GMS devices, where they are pre-installed, than on Apple's iOS devices, where they are not pre-installed.<sup>75</sup> For example, only 2 percent of iOS device owners used the Google Drive app, while 39 percent of GMS-enabled device owners used it. Additionally, only 12 percent of iOS device owners used the Gmail app, while 58 percent of GMS-enabled device owners used it. These results are consistent across all GMS apps.<sup>76</sup> There are other explanations for this behavior, including the possible superiority of Apple apps, many of which are not available on Android devices, or the added benefit of using

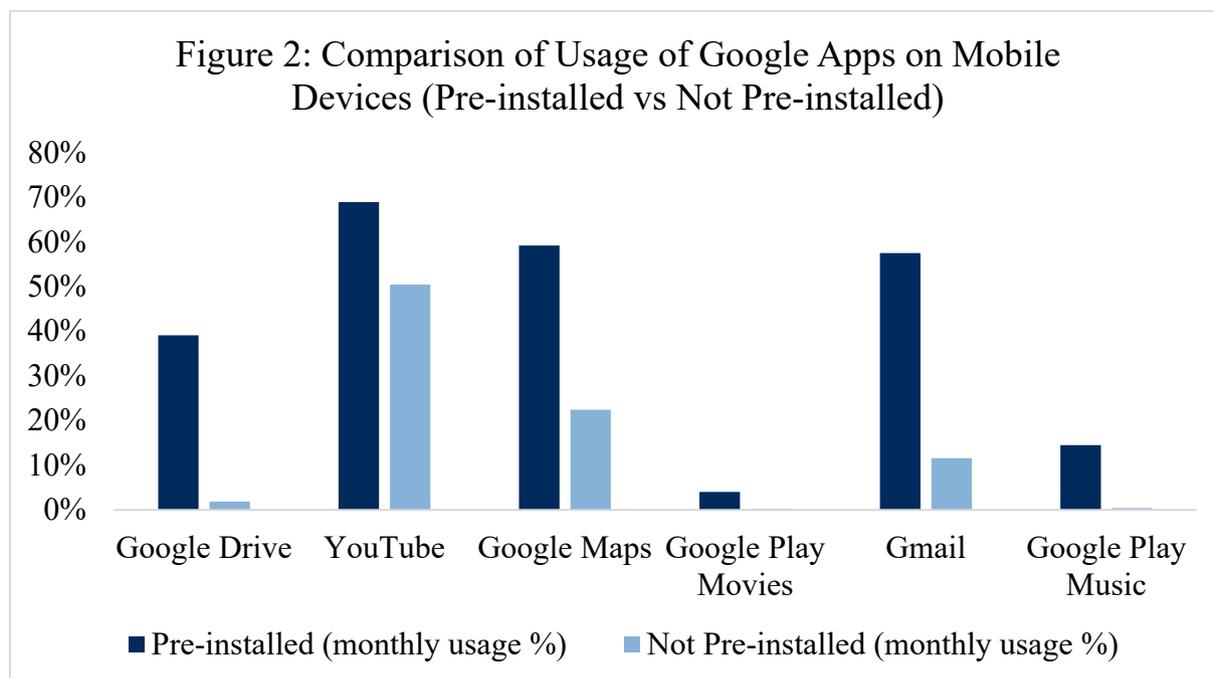
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<sup>74</sup> *Mobile & Tablet Search Engine Market Share North America*, STATSCOUNTER, <https://gs.statcounter.com/search-engine-market-share/mobile-tablet/north-america#monthly-201910-201910-bar>. Google's domination is also helped by its exclusive contracts and anticompetitive acquisitions. *See infra* Sections III and IV.

<sup>75</sup> *Google EU Case*, *supra* note 10, at ¶¶ 790-92.

<sup>76</sup> *Id.*

Google (or Apple) products together, instead of mixing and matching. However, the significant disparity in usage provides at least suggestive evidence that pre-installation of GMS apps gives Google a competitive advantage over competing apps.



In addition to pre-installing GMS apps, Google’s MADAs also require the apps to be displayed prominently on devices. The MADAs dictate that some apps be displayed on the device’s home screen. Other apps cannot be placed “more than one level below the [home screen],” and some MADAs dictate the precise order in which the app icons should appear on the home screen.<sup>77</sup> The prominent placement of Google apps on GMS devices further enhances Google’s competitive advantage over competing apps.

These terms dampen competition on the merits. While competitors can offer payment to have their apps pre-installed on GMS-enabled devices, they cannot share the same prominent locations on users’ devices that Google’s apps already occupy. Even if consumers prefer competing apps, strong default-biases prevent competitors from increasing market share to a level commensurate with their relative quality.<sup>78</sup> Rivals cannot outbid Google, which, as the

<sup>77</sup> Edelman & Geradin, *supra* note 22, at 186.

<sup>78</sup> See, e.g., Sven Joeckel & Leyla Dogruel, *Default Effects in App Selection: German Adolescents’ Tendency to Adhere to Privacy or Social Relatedness Features in Smartphone Apps*, 8 MOBILE & MEDIA COMM. 22 (2019).

monopolist of the Android opening screen, has economies of scope to afford continued ownership. Competitors to Google’s apps must therefore rely on consumers to actively seek out their products on the Play Store. While this can and does occur—as the widespread use of Outlook, for example, attests—rivals must overcome this anticompetitive hurdle on the way to the consumer. The result is that Google can attract more users to its mobile apps than it otherwise would if competition was on the merits. The supracompetitive usage of Google apps results in increased intake of user data, adding to the already lopsided dominance of Google Search.

### **III. Google Further Entrenches its Mobile Search Monopoly Through Exclusive Dealing**

Beyond its anticompetitive use of Android, Google uses exclusive contracts with OEMs to make Google Search the default and exclusive search engine across hundreds of millions of devices. In doing so, Google leverages its market power in the search engine market to foreclose its potential and actual rivals.

This strategy was one with which Google was quite familiar. Prior to the mobile revolution, Google frequently entered into exclusivity arrangements to act as the sole provider of search services on third-party sites, increasing its search traffic and the value of its platform to advertisers.<sup>79</sup> One prominent example is Google’s contract in 2000 to provide search functions for Yahoo!.<sup>80</sup> According to some industry insiders, this deal “made Google into the giant it is today” by generating an important source of search volume and foreclosing that volume to competitors.<sup>81</sup> Others have similarly noted that Google’s exclusive arrangement with AOL in 2002 was a significant moment in Google’s history.<sup>82</sup>

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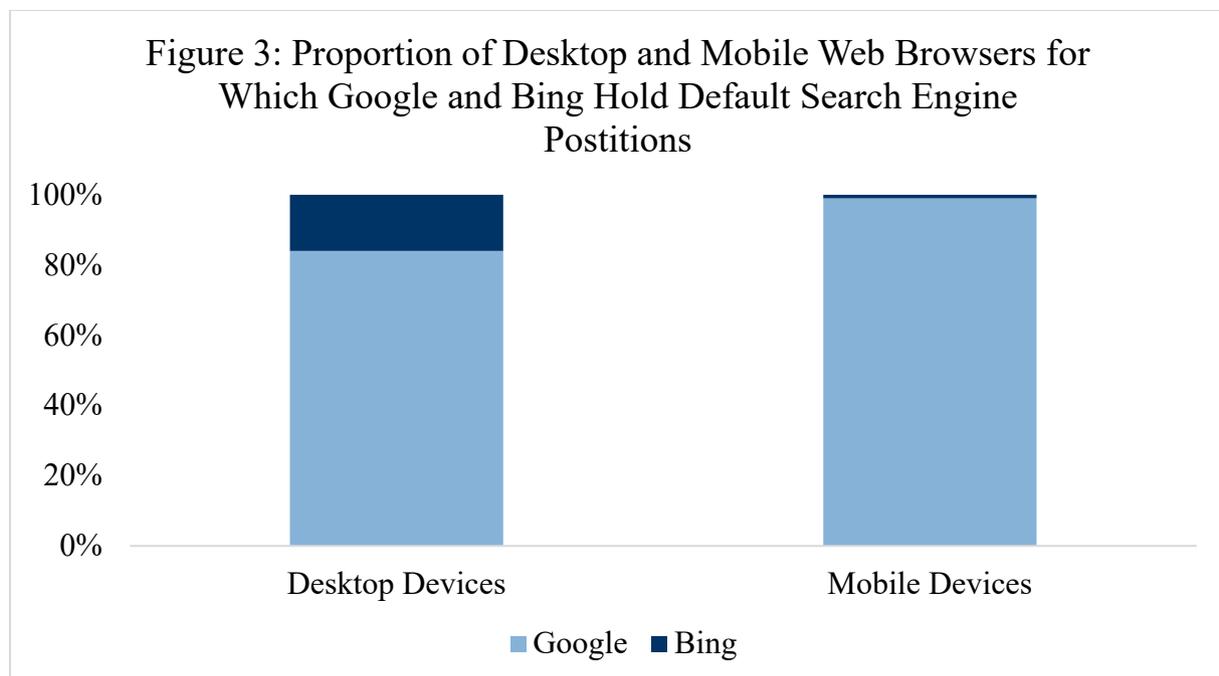
<sup>79</sup> *Online Platforms and Digital Advertising: Market Study Interim Report* [hereinafter *CMA Report*], COMPETITION & MARKET AUTHORITY 80.

<sup>80</sup> *Yahoo! Selects Google as its Default Search Engine Provider*, GOOGLE BLOG (June 26, 2000), <http://googlepress.blogspot.com/2000/06/yahoo-selects-google-as-its-default.html>.

<sup>81</sup> Danny Sullivan, *2000 In Review: AdWords Launches; Yahoo Partners With Google; GoTo Syndicates*, SEARCH ENGINE LAND (Feb. 1, 2010), <https://searchengineland.com/2000-in-review-adwords-launches-yahoo-partners-with-google-34831>.

<sup>82</sup> Matt Krantz, *Google Flexes Muscles with AOL Search Deal*, USA TODAY (May 2, 2002).

As much as Google was successful in establishing its dominance through default and exclusive dealing in the personal computer environment, it was even more successful on mobile devices. According to a study by the Competition and Markets Authority (CMA) in the United Kingdom, Google used such agreements to hold default positions across 99 percent of mobile web browsers, as opposed to 84 percent of desktop web browsers.<sup>83</sup>



Google uses two types of agreements to achieve these outcomes. First, Google established agreements with OEMs that produce non-GMS devices to be those devices’ default search engine provider. In 2007, Google struck the most notable of these deals with Apple. Google pays Apple annually for Google Search to be the default search engine on all of Apple’s smart mobile devices.<sup>84</sup> By default, any search queries typed into the Safari explorer bar are executed by Google Search.<sup>85</sup> These agreements are key to Google’s mobile strategy, because non-GMS devices—most importantly, Apple’s iPhones and iPads—are free to set any search engine as their default. By capturing this market, Google became the default search engine provider on virtually all smartphones and mobile devices.<sup>86</sup> Today, almost half of all Google’s

<sup>83</sup> *CMA Report, supra* note 79, at 80.

<sup>84</sup> *Google EU Case, supra* note 10, at ¶ 119.

<sup>85</sup> *CMA Report, supra* note 79, at 79.

<sup>86</sup> *Google EU Case, supra* note 10, at ¶¶ 907-09.

ad clicks—users clicking on advertisements—come from iOS devices.<sup>87</sup> iPhone clicks are also, on average, more valuable because Apple product users generally have higher income than Android users and spend more money through their phones.<sup>88</sup> The importance of these agreements is underscored by the amount that Google pays to maintain them. In 2019, Google’s payment to Apple rose to \$12 billion.<sup>89</sup> Because Google already possesses market power in Android and on desktops, foreclosed competitors such as Bing cannot match these sums.

The second type of agreement that Google employs to foreclose mobile search rivals is revenue share agreements. Starting in 2010, Google reached agreements with at least six OEMs to share search advertising revenues provided that the OEMs did not pre-install any competing general search service on any device within an agreed portfolio.<sup>90</sup> In these contracts OEMs agreed not to pre-install any competitors to Google Search, and, in some cases, Google Play or its predecessor, Android Market.<sup>91</sup> In exchange, Google paid the OEMs a specified share of its net ad or app store revenues.

Although Google already requires that OEMs make Google Search the default search engine on GMS devices, these agreements go further by requiring exclusivity. According to one Google executive, the purpose of the revenue share agreements is to encourage OEMs to have all search engine services on their devices fulfilled by Google:

Non-duplication of services is the same as exclusivity as long as it applies across *all* devices (or all Android devices). . . . I think this approach is really important otherwise Bing or Yahoo can come and steal away our Android search distribution at any time, thus removing the value of entering into contracts with

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<sup>87</sup> Adam Levy, *Why Google Is Willing to Pay Apple \$12 Billion Per Year*, THE MOTLEY FOOL (Oct. 24, 2018), <https://www.fool.com/investing/2018/10/24/why-google-is-willing-to-pay-apple-12-billion-per.aspx>.

<sup>88</sup> Though iPhone users make up fewer than 15 percent of smartphone users, they far outspend those on Android. In 2019, iPhone users spent \$54 billion on the App Store worldwide, compared to \$29 billion on Google Play. *See Consumer Spending in Mobile Apps Grew 17 percent in 2019 to Exceed \$83 Billion Globally*, SENSOR TOWER (Jan. 6, 2020), <https://sensortower.com/blog/app-revenue-and-downloads-2019>; *Global Market Share Smartphone Operating Systems of Unit Shipments, 2014-2023*, STATISTA (Feb. 28, 2020), <https://www.statista.com/statistics/272307/market-share-forecast-for-smartphone-operating-systems>.

<sup>89</sup> Lisa Marie Segarra, *Google to Pay Apple \$12B to Remain Safari’s Default Search: Report*, FORTUNE (Sept. 29, 2018), <https://fortune.com/2018/09/29/google-apple-safari-search-engine>.

<sup>90</sup> *Google EU Case*, *supra* note 10, at ¶ 192. In addition to reaching these agreements with OEMs, Google also established revenue share agreements with mobile network operators (MNOs) in the European Union.

<sup>91</sup> *Id.* at ¶¶ 200-09.

them. Our philosophy is that we are paying revenue share *in return for* exclusivity.<sup>92</sup>

A. *Google's Exclusive Dealing is Anticompetitive*

These contractual arrangements constitute payments for exclusive placements. The distribution channels won through these contracts provide an important mechanism through which Google leverages its market power to stifle competition. In particular, Google uses the arrangements to construct significant barriers to entry in furtherance of its monopoly in the search engine market.

Google's exclusive contract is particularly harmful in this arena because the market is highly concentrated and Google has locked up the rest of mobile search through its GSM contracts. Although exclusive contracts that only affect a small portion of the market are generally benign or even procompetitive,<sup>93</sup> here Google is paying to foreclose its rivals from default positioning on approximately 45 percent of the U.S. smartphone market—all iPhone users.<sup>94</sup> In effect, Google is paying to erect a barrier to the remaining relevant share of U.S. smartphones, raising its mobile search market share to almost 100 percent.

Moreover, the mobile search market exhibits two features that make exclusive contracts particularly harmful: network effects and economies of scale.<sup>95</sup> Network effects exist when the more people that use a product, the more useful and desirable it becomes.<sup>96</sup> Economies of scale exist when the cost of producing a product or service decreases as the producer serves more customers—for example, when there are large upfront costs to create the product and low

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<sup>92</sup> *Id.* at ¶ 1200.

<sup>93</sup> See Jonathan M. Jacobson, *Exclusive Dealing, "Foreclosure," and Consumer Harm*, 70 ANTITRUST L.J. 311, 325 (2002).

<sup>94</sup> See *Share of Smartphone Users that Use an Apple iPhone in the United States from 2014 to 2021*, STATISTA (Feb. 27, 2020), <https://www.statista.com/statistics/236550/percentage-of-us-population-that-own-a-iphone-smartphone>.

<sup>95</sup> See Michael D. Whinston, *Exclusivity and Tying in U.S. v. Microsoft: What We Know, and Don't Know*, 15 J. ECON. PERSP. 63, 73 (2001) ("The presence of economies of scale and network effects is a central feature of models of anticompetitive tying and exclusionary contracts, and it implies that depriving a rival of sales can weaken its future competitiveness.").

<sup>96</sup> See FIONA SCOTT MORTON ET AL., STIGLER CTR., STIGLER COMMITTEE ON DIGITAL PLATFORMS: MARKET STRUCTURE AND ANTITRUST SUBCOMMITTEE REPORT 7 (Sept. 2019).

marginal costs to serve new customers.<sup>97</sup> Search exhibits both features. The better a search engine is, the more people want to use it; the more people search on it, the better it becomes as it learns from their searches.<sup>98</sup> Although a company must pay large fixed costs to develop a search engine, it faces close to zero marginal cost in serving another customer.<sup>99</sup>

Exclusives are therefore particularly harmful in this context because relevant rivals generally cannot compete with the incumbent inch by inch—they must scale quickly or not compete at all. To make the economics of search work, a firm needs to reach a large pool of users quickly to make its large upfront investment worthwhile. Moreover, the rival needs that large user base to improve its results by learning from its millions of users. Google’s exclusive dealing block any firm from getting so much as a toehold into mobile search, and so prevents any competitor from reaching the scale it would need to truly challenge Google’s dominance.<sup>100</sup>

These exclusivity arrangements thus reduce the ability of OEMs to pre-install competing search services, harming competition in the search engine market and further solidifying Google’s dominant market position. Google’s agreements contractually foreclose competing search engine providers from the opportunity to compete on the merits for the distribution necessary to achieve efficient scale. By locking up OEMs as distribution channels, Google has artificially increased its search volume at the expense of Bing, other competitors such as DuckDuckGo, and any potential entrants.

#### **IV. Google’s Acquisition of Waze Further Forecloses Competition**

Google has also engaged in a series of anticompetitive acquisitions to lock up user data, foreclose others from accessing that data, and entrench its monopoly. In this section, we focus

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<sup>97</sup> *Id.*

<sup>98</sup> See Ben Thompson, *A Framework for Regulating Competition on the Internet*, STRATECHERY (Dec. 9, 2019), <https://stratechery.com/2019/a-framework-for-regulating-competition-on-the-internet/>.

<sup>99</sup> See SCOTT MORTON et al., *supra* note 96, at 7.

<sup>100</sup> *Cf.* Whinston, *supra* note 95 (discussing similar tactics by Microsoft).

on Google's acquisition of Waze, though that purchase was not Google's only such anticompetitive purchase.<sup>101</sup>

Google launched its Google Maps mobile app in 2008. In 2013, Google took another step to obtain users' location data when it acquired Waze Mobile Limited ("Waze") for \$1.1 billion. Waze was an Israel-based mobile navigation software company that provided a free mapping application which "enable[d] drivers to build and use live maps, real-time traffic updates and turn-by-turn navigation" for mobile devices, including Android phones and iPhones.<sup>102</sup> The Waze application "keeps the user up-to-date about the best route to the destination and is often updated according to changing factors such as traffic and road conditions."<sup>103</sup> In its blog post announcing the acquisition, Google stated that it was "excited about the prospect of enhancing Google Maps with some of the traffic update features provided by Waze and enhancing Waze with Google's search capabilities."<sup>104</sup>

Due to an exception to the Hart-Scott-Rodino (HSR) mandatory pre-merger filing threshold, which exempts companies with assets located outside the United States, Google was able to acquire Waze without a pre-merger filing.<sup>105</sup> Nevertheless, given that the Google Maps software was already the dominant digital mapping and navigation service in 2013, Google's acquisition of Waze triggered investigations from the FTC, the U.K. Office of Fair Trading (OFT) and the Israel Antitrust Authority.<sup>106</sup> Each of these entities ultimately concluded their

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<sup>101</sup> See Tim Wu & Stuart A. Thompson, *The Roots of Big Tech Run Disturbingly Deep*, N.Y. TIMES (June 7, 2019), <https://www.nytimes.com/interactive/2019/06/07/opinion/google-facebook-mergers-acquisitions-antitrust.html> (categorizing 171 of the 270 firms Google acquired between 2009 and 2019 as Google's potential or actual competitors).

<sup>102</sup> *Completed Acquisition by Motorola Mobility Holding (Google, Inc.) of Waze Mobile Limited*, U.K. OFF. OF FAIR TRADING 1 (Dec. 17, 2013) [hereinafter *OFT Waze Report*], <https://assets.publishing.service.gov.uk/media/555de2cfed915d7ae2000027/motorola.pdf>.

<sup>103</sup> *Id.* at 2 n.1.

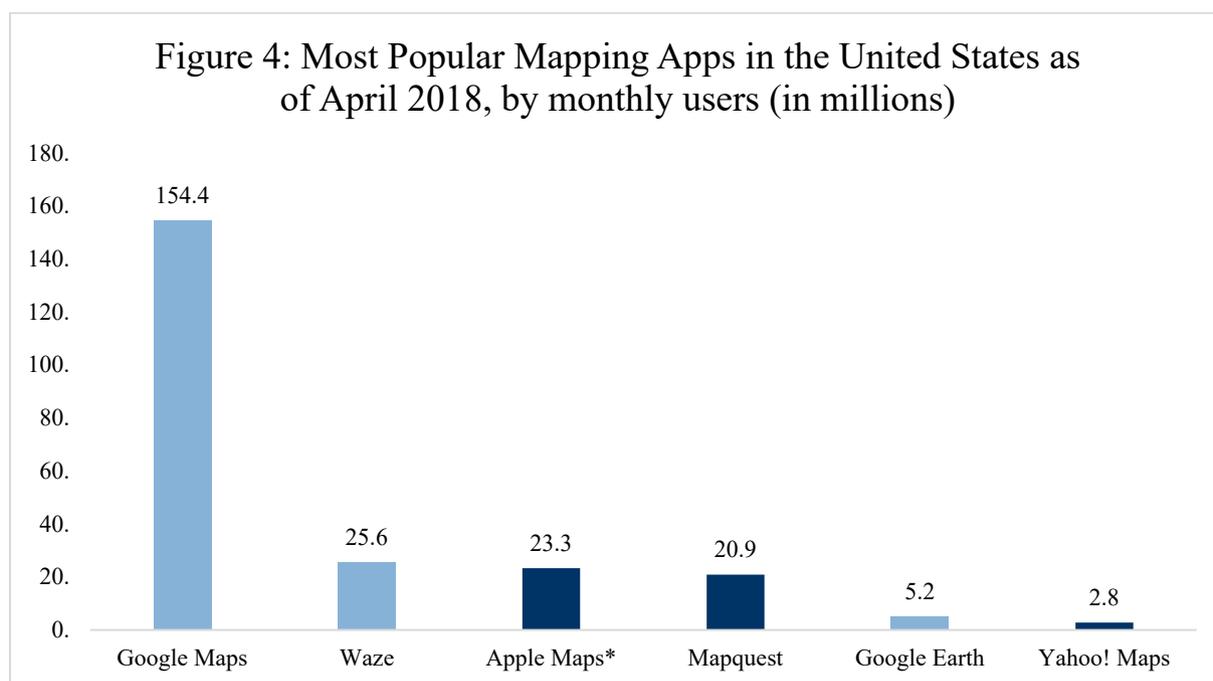
<sup>104</sup> Brian McClendon, *Google Maps and Waze, Outsmarting Traffic Together*, GOOGLE (June 11, 2013), <https://googleblog.blogspot.com/2013/06/google-maps-and-waze-outsmarting.html>.

<sup>105</sup> 16 C.F.R. § 802.50.

<sup>106</sup> See Charles Arthur, *Google acquisition of Waze Traffic App Sparks OFT Inquiry*, GUARDIAN (Aug. 27, 2013), <https://www.theguardian.com/technology/2013/aug/27/google-waze-app-sparks-oft-inquiry>; Amir Efrati, *Google Confirms Antitrust Review of Waze Deal*, WALL ST. J. (Jun. 23, 2013), <https://blogs.wsj.com/digits/2013/06/22/google-confirms-antitrust-review-of-waze-deal>; *Israel's Antitrust Panel Taking a Look at Google-Waze Merger*, JEWISH TELEGRAPHIC AGENCY (Oct. 2, 2013), <https://www.jta.org/2013/10/02/israel/israel-antitrust-authority-looking-at-google-waze-merger>.

investigations without pursuing antitrust enforcement. In the OFT’s public explanation of its decision, it concluded that the presence of other strong competitors such as Apple Maps, alongside Waze’s relatively small scale, rendered the merger benign.<sup>107</sup> The OFT failed to consider the chief difference between Apple Maps, which is mostly monetized as part of the Apple iPhone package, rather than through advertising, and Waze, which was Google’s chief competitor in ad-funded mobile mapping.

Today, Waze is the second most popular mobile mapping app behind Google Maps. Together, Google and Waze control 80 percent of the mobile mapping market.<sup>108</sup> Importantly, Yahoo! is the only other search engine provider that is vertically integrated with a mobile mapping app, and Yahoo! Maps controls less than a two percent market share of the mobile mapping app market.<sup>109</sup>



The FTC has launched a series of investigations on small acquisitions that were made during the last decade. Robert Litan, a former DOJ antitrust official, said that Google’s

<sup>107</sup> See *OFT Waze Report*, *supra* note 102, at 19.

<sup>108</sup> *Most Popular Mapping Apps in the United States as of April 2018, by Monthly Users*, STATISTA, <https://www.statista.com/statistics/865413/most-popular-us-mapping-apps-ranked-by-audience>.

<sup>109</sup> *Id.*

acquisition of Waze is certainly one of the past deals that will be subject to the FTC's re-examination.<sup>110</sup>

*A. Google's Acquisition of Waze is Anticompetitive*

The Google-Waze acquisition generates two major types of anticompetitive effects, one involving the increased data which Waze provides to Google and the other involving the removal of a maverick competitor to Google Maps.

*1. Enhancing Google Search's Monopoly and Foreclosing Competitors from Location Data*

Location-based advertisements, and especially those executed over mobile devices, allow search engines to monetize advertisements at a far higher rate than they would otherwise. Mobile advertising "allows consumers to be addressed (i) individually, (ii) based on their current location, and (iii) dynamically in real-time; furthermore, (iv) content may be replaced quickly by remote access."<sup>111</sup> Advertisers widely cite location-based advertising as being of value to their businesses. One study indicates that nine out of 10 advertisers believe that location-based advertising creates higher sales growth in the customer base and an increase in customer engagement.<sup>112</sup> With this increased value to advertisers come higher advertising prices and increased revenues to search engine providers.

Possessing location data is one of Google Search's major advantages over competitors in the search engine market. While Google already has access to millions of consumers' location data through Google Maps, by acquiring Waze's large user base and proprietary algorithms, Google enhanced its access to broader and more accurate user location data. This in turn enables Google to provide more personalized and accurate search results to its users.

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<sup>110</sup> Mark Bergen & Ben Brody, *Google's Waze Deal is a Likely Target in FTC Antitrust Sweep*, BLOOMBERG (Feb. 14, 2020), <https://www.bloomberg.com/news/articles/2020-02-14/google-s-waze-deal-is-a-likely-target-in-new-ftc-antitrust-sweep>.

<sup>111</sup> See, e.g., Christine Bauer & Christine Strauss, *Location-based Advertising on Mobile Devices: A Literature Review and Analysis*, 66 MGMT. REV. Q. 1 (2016).

<sup>112</sup> Brian Czarny, *Factual's 2019 Location-Based Marketing Report*, FACTUAL (Jun. 12, 2019), <https://www.factual.com/blog/factuals-2019-location-based-marketing-report>.

According to one study, “[t]he merger with Waze might have made Google an even more relevant provider of location data, reinforcing its competitive position for the position of online advertising across all its services.”<sup>113</sup>

More importantly, however, the acquisition foreclosed this important location data from rivals in the search engine market. When Google announced the deal in 2013, an analyst at RBC Capital Market noted that the “move eliminates Waze as a potential acquisition target for competitors who could use the app’s collection of data and 50 million users to bolster their own location-based products.”<sup>114</sup> According to Microsoft, “accessing at-scale location data from user devices is a critical input to providing relevant, localised results,” and the location data provided by Google Maps and Waze gives Google “unique advantages in this area.”<sup>115</sup> Absent the acquisition, Microsoft or other potential Google competitors could have acquired Waze or reached an agreement to use its data to enhance their search results. Google’s acquisition of Waze thus prevented potential competitors from using its data to challenge Google’s dominance in mobile search.

## 2. *Removal of a Maverick Firm*

Waze fits the definition of a maverick firm, and its acquisition likely reduced Google’s incentive to innovate and improve its mapping apps.<sup>116</sup> Although Waze was a small company with little presence and revenue in the U.S. market in 2013, Waze’s high level of user engagement distinguished it from the other mobile mapping services. The app uses crowd-sourced driver data to optimize routes, alert drivers of upcoming traffic information, and provide accurate estimated time of arrival.<sup>117</sup> At the time of the Google-Waze acquisition,

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<sup>113</sup> Bergen & Brody, *supra* note 110.

<sup>114</sup> *Id.*

<sup>115</sup> *CMA Report*, *supra* note 79, at 78.

<sup>116</sup> Cf. Sai Krishna Kamepalli, Raghuram Rajan & Luigi Zingales, *Kill Zone* (working paper, Nov. 2019), [https://faculty.chicagobooth.edu/raghuram.rajan/research/papers/Kill%20zone\\_nov.pdf](https://faculty.chicagobooth.edu/raghuram.rajan/research/papers/Kill%20zone_nov.pdf).

<sup>117</sup> Peter Cohan, *Four Reasons Google Bought Waze*, FORBES (June 11, 2013), <https://www.forbes.com/sites/petercohan/2013/06/11/four-reasons-for-google-to-buy-waze/#1e81a91c726f>.

Waze was the largest crowdsourced mapping app in the world.<sup>118</sup> By buying a firm that was putting pressure on one of its leading products, Google could relax its inventive efforts.

## V. Google's Anticompetitive Actions Harm Consumers

Google has acquired and maintained its mobile search monopoly in part through anticompetitive means. This monopoly harms consumers in the form of increased retail prices, decreased quality, and weakened innovation.

### A. Higher Consumer Prices

Google's dominant market position allows it to charge higher prices to advertisers than it would be able to in a competitive market. Costs on Google's advertising platform, Google Ads, are calculated on a cost-per-click (CPC) basis, also called pay-per-click. Through this model, advertisers pay Google every time a consumer clicks on their advertisement. Average CPC has increased over time. For example, between the first quarter of 2017 and the first quarter of 2018, average CPC on Google Search advertisements increased by 117 percent.<sup>119</sup> Importantly, this increase in advertising costs does not correlate to more effective advertisements. From 2015-2017, advertisers increased spending on search ads by 42 percent, but visits to advertisers' websites resulting from those ads increased only 11 percent.<sup>120</sup>

This phenomenon, known as "CPC inflation,"<sup>121</sup> is reflected in both Google's advertising revenue as well as companies' online advertising costs. Google's global advertising revenue has grown consistently, with revenues increasing by almost 16 percent from 2018 to

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<sup>118</sup> See *Waze - Crowdsourcing Maps and Traffic Information*, HARV. BUSINESS SCHOOL (Dec. 6, 2015), <https://digital.hbs.edu/platform-digit/submission/waze-crowdsourcing-maps-and-traffic-information>.

<sup>119</sup> *Q1 2018 Paid Media Benchmark Report*, ADSTAGE, 40-43, [adstage.io/resources/q1-2018-ppc-benchmark-report](https://adstage.io/resources/q1-2018-ppc-benchmark-report).

<sup>120</sup> See Mark Fahey, *Digital Ads: More Expensive but Reaching Fewer Consumers*, CNBC (Mar. 21, 2017), <https://www.cnbc.com/2017/03/20/digital-ads-more-expensive-but-reaching-fewer-consumers.html>.

<sup>121</sup> *Why Are Clicks Costing More? Understanding CPC Inflation*, EVOLUTED, (Apr. 10, 2019), <https://www.evolutd.net/thinktank/marketing/cpc-inflation>.

\$134.81 billion in 2019.<sup>122</sup> This corresponds to a nearly 17 percent increase in advertising costs among businesses from mid-2018 to mid-2019.<sup>123</sup>

These observations are consistent with the literature on increasing market power. As the DOJ's Horizontal Merger Guidelines put it, “[e]nhancement of market power by sellers often elevates the prices charged to customers.”<sup>124</sup> Numerous subsequent studies have confirmed this thesis.<sup>125</sup> In the online search advertising context, because advertisers have few alternatives in the market, Google has the power to raise its prices without falling profits. Thus, both the data and the literature are consistent with the notion that Google's enhanced power in the search engine market—supported by Google's tying strategy, exclusive contracts, and key acquisitions—results in higher costs to advertisers.

Increased marketing costs to advertisers will likely flow to end consumers in the form of higher prices for goods and services. When the cost to advertisers increases, firms have three options: (1) increase consumer prices, (2) reduce the amount of advertising, or (3) continue to advertise at the same rate and accept reduced profits. As Tim Fisher and Robert Waschik explain, in addition to option 1, option 2 also, paradoxically, has the effect of increasing consumer prices.

As the cost of advertising rises, the firm will advertise less. This increases the informational distortion in the market, since now fewer consumers will be aware of the differences between each firm's product, since the firms are advertising less. As such, the market becomes *less competitive*, and firms can respond by increasing the equilibrium price.<sup>126</sup>

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<sup>122</sup> *Advertising Revenue of Google from 2001 to 2019*, STATISTA, <https://www.statista.com/statistics/266249/advertising-revenue-of-google/>.

<sup>123</sup> *2019 Half-Year IAB Internet Ad Revenue Report*, IAB (Oct. 21, 2019), <https://www.iab.com/insights/internet-advertising-revenue-2019-half-year>.

<sup>124</sup> DEP'T OF JUST., HORIZONTAL MERGER GUIDELINES § 1(2010).

<sup>125</sup> See, e.g., Ville Aalto-Setälä, *The Effect of Concentration and Market Power on Food Prices: Evidence from Finland*, 78 J. RETAILING 3 (2002) (in the grocery industry); Cory Capps & David Dranove, *Hospital Consolidation and Negotiated PPO Prices*, 32 HEALTH AFF. 2 (2004) (in the healthcare industry); Justine S. Hastings & Richard J. Gilbert, *Market Power, Vertical Integration and the Wholesale Price of Gasoline*, 53 J. INDUS. ECON. 4 (2005) (in the wholesale gasoline industry).

<sup>126</sup> TIM FISHER & ROBERT WASCHIK, *MANAGERIAL ECONOMICS: A GAME THEORETIC APPROACH*, 145 (1st ed. 2005).

Therefore, to maintain profits firms can either increase consumer prices directly or reduce the amount of advertising conducted, which will indirectly increase consumer prices. Either way, an increase in advertising costs will likely result in increased consumer pricing. As applied to Google, this framework suggests that higher prices for ads on Google’s AdTech platform will result in increased retail prices.

Furthermore, the literature on pass-throughs indicates that an increase in marginal cost will likely result in increased consumer prices. Numerous factors affect the amount to which firms facing increased marginal costs will pass on those costs to consumers, most notably: whether the cost change is idiosyncratic or industry-wide; the responsiveness of firms’ demand and supply conditions; and the degree of competition between firms up and down the supply chain.<sup>127</sup> The economics literature indicates that pass-throughs under almost all conditions will be between zero—that is, no pass-through—and one, that is, full pass-through.<sup>128</sup> Thus, with so many diverse firms advertising on Google’s AdTech platform, it is not credible that consumers using Google Search will not see at least some increase in retail prices as a result of increased advertising costs on the platform. Considering the sheer size of the price increases on Google’s platform, even a highly conservative low passthrough rate means a very large aggregate increase in consumer prices.

### *B. Reduced Quality*

In addition to increasing prices, Google’s enhanced market power in online search weakens the quality of its services. This can take two primary forms. First, Google’s market power may allow it to provide lower quality search results than it would provide if it faced

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<sup>127</sup> *Cost Pass-through: Theory, Measurement, and Potential Policy Implications*, U.K. OFF. OF FAIR TRADING 1 (Feb. 2014), [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/320912/Cost\\_Pass-Through\\_Report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/320912/Cost_Pass-Through_Report.pdf).

<sup>128</sup> *Id.* at 123.

competition. Second, Google may be able to provide users weaker data privacy than it would otherwise.<sup>129</sup>

As Google's search monopoly has grown more entrenched, it has lowered the quality of its search results in several respects. First, as Google has decreased the total number of search results on a page, it has comingled advertisements and organic results in such a way as to make distinguishing the two more difficult. In 2016, Google changed the layout of its search results page. This change affected the placement of advertisements on the results page in several ways, all of which made the difference between organic search results and advertisements less salient.<sup>130</sup> At the time of the changes, studies concluded that "the shift in positioning of ads from the right panel to the left will significantly improve the performance of ads in terms of CTR."<sup>131</sup> According to a FTC memorandum, this integration of advertisements and organic results on Google's search platform produces lower quality search results for users.<sup>132</sup> Users must navigate through less-relevant promoted advertisements to access the information they want, often misidentifying advertisements as organic results to their query.

Google has also weakened user privacy protections. Privacy concerns regarding Google Search have been well covered in both the literature and the media.<sup>133</sup> As such, this paper will only provide a few examples of these concerns and how they relate to Google's enhanced market power. In the early 2000s, when Google had significantly less market power than today,

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<sup>129</sup> See, e.g., Eleonora Ocello et al., *What's Up with Merger Control in the Digital Sector? Lessons from the Facebook/WhatsApp EU Merger Case*, 2015 COMPETITION MERGER BRIEF 2, 9 ("Privacy could be regarded as a non-price parameter of competition which may be degraded by the merged entity post-merger.").

<sup>130</sup> The main changes were as follows. First, advertisements which previously appeared on the right side of the results page were removed, making the remaining search results larger. Second, the yellow coloring which used to distinguish advertisements at the top of the results page from organic results was removed, leaving the remaining results appearing more like organic results. Third, in some circumstances, the advertisements at the top of the page were increased from three to four. Fourth, advertisements were added to the bottom of the search results page. Divya Sharma et al., *Making Sense of the Changing Face of Google's Search Engine Results Page: An Advertiser's Perspective*, 16 J. INF. COMMUN. ETHICS SOC. 90, 98 (2017).

<sup>131</sup> *Id.*

<sup>132</sup> Memorandum from FTC Bureau of Competition Staff to the Comm'n on Google Inc. 24 (Aug. 8, 2012), <http://graphics.wsj.com/google-ftc-report> [<https://perma.cc/5RUP-FHQS>].

<sup>133</sup> See, e.g., Christian Stewart, *Data Privacy Concerns with Google*, HACKERNOON (Mar. 29, 2018), <https://hackernoon.com/data-privacy-concerns-with-google-b946f2b7afea>.

it was “much more open about its practices” in its privacy disclosures.<sup>134</sup> For example, the 2004 version of Google’s privacy policy notified users that Google tracked and used email text from Gmail to better serve advertisements on its Google Ads platform. While Google used the same methods in 2013, a time when it had significantly more market power in the online search market, “nowhere in Google’s 2013 Privacy Statement did the company expressly state that it would scan emails for the express purpose of creating user profiles to target advertising.”<sup>135</sup> In other words, beginning in 2013, Google withheld important information from users which it previously disclosed in its privacy policy.

In addition to withholding information about its privacy policies, the content of these privacy policies has also become far more intrusive. For example, in 2017 the company asked users to accept a new privacy policy that “reversed a nearly decade-old policy at Google to separate data between products such as search, Gmail and YouTube and its widely used DoubleClick business, which enables advertisers to buy ad space ads on third-party sites.”<sup>136</sup> This changed policy significantly weakened privacy protections, allowing Google to track users as they surf third-party websites on the internet by using cookies, a mechanism for websites to record users’ browsing activity. This change occurred at a time when Google Search had a 94 percent market share, significantly higher than its 54 percent market share a decade earlier when Google’s original restriction on internet cookies was created.<sup>137</sup> As Google’s market power has increased, its privacy protections have deteriorated, thereby lowering quality for Google Search users.

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<sup>134</sup> Crystal Schreiber, *Google’s Targeted Advertising: An Analysis of Privacy Protections in an Internet Age*, 24 *TRANSNAT’L L. & CONTEMP. PROBS.* 269, 273 (2014).

<sup>135</sup> *Id.* at 274.

<sup>136</sup> Natalia Drozdiak & Jack Nicas, *Google Privacy-Policy Change Faces New Scrutiny in EU*, *WALL ST. J.* (Jan. 24, 2017), <https://www.wsj.com/articles/oracle-expresses-concern-to-eu-over-google-privacy-policy-1485263548>.

<sup>137</sup> Danny Sullivan, *Nielsen NetRatings: August 2007 Search Share Puts Google On Top, Microsoft Holding Gains*, *SEARCH ENGINE LAND* (Sept. 21, 2007), <https://searchengineland.com/nielsen-netratings-august-2007-search-share-puts-google-on-top-microsoft-holding-gains-12243>.

As demonstrated by both the decreasing distinguishability of advertisements on Google Search result pages as well as the decreasing privacy protection on the platform, Google Search's quality has declined as its market power has increased. These findings align with studies in other markets that generally find that firms with greater market power can lower their product quality.<sup>138</sup>

### C. *Weakened Innovation*

Beyond increasing prices and decreasing quality, Google's activities in the mobile sector also weaken innovation in a variety of markets. Competition stimulates and accelerates innovation.<sup>139</sup> Monopolists have less incentive to create innovations than firms in a competitive environment.<sup>140</sup> When monopolists innovate, they replace existing monopoly profits, whereas entrants who innovate will reap monopoly profits with no replacement offset.<sup>141</sup> By reducing competition—in some circumstances to the point of monopoly—in the search engine as well as other markets, Google's practices deprive consumers of the benefits of innovation.

Google's tying arrangements reduce innovation in both the mobile operating system market and in the markets for numerous mobile apps. As illustrated by the example of the Nokia X, Google's product tying strategy foreclosed innovative competitors from successfully bringing their mobile operating systems to market.<sup>142</sup> The same is true in the various mobile apps markets in which Google's GMS apps compete; the barriers to entry which Google's tying strategy erect in these markets likely result in foreclosure that restricts innovation.

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<sup>138</sup> See generally Deborah L. Feinstein, Patrick Kuhlmann & Peter J. Mucchetti, *Accountable Care Organizations and Antitrust Enforcement: Promoting Competition and Innovation*, 40 J. HEALTH POLIT. POLICY LAW 877 (2015); Peter J. Hammer & William M. Sage, *Antitrust, Health Care Quality, and the Courts*, 102 COLUM. L. REV. 545, 617 (2002); Robert D. Joffe, *Antitrust Law and Proof of Consumer Injury*, 75 ST. JOHN'S L. REV. 615, 618 (2001).

<sup>139</sup> See, e.g., F. M. Scherer, *Antitrust, Efficiency, and Progress*, 62 N.Y.U. L. REV. 998, 1011 (1987); William G. Shepherd, *Economic Analysis to Guide Antitrust Enforcement: Prospects for Section 2*, 35 N.Y.L. SCH. L. REV. 917, 918 (1990).

<sup>140</sup> See Whinston, *supra* note 95.

<sup>141</sup> Einer Elhauge, *Defining Better Monopolization Standards*, 56 STAN. L. REV. 253, 299 n.141 (2003).

<sup>142</sup> See *infra* Section II.

Google's exclusive contracts also likely reduce innovation. By foreclosing competitors from significant volume, Google shrinks the viable market for search engine services and decreases competitors' revenue and intake of data, two factors crucial to innovation. Thus, Google's exclusivity agreements reduce both the incentive and the ability of competitors to develop innovative features. Simultaneously, the agreements disincentivize Google from innovating, as the company does not need to compete on the merits with competing search engines for default or exclusive positions on a substantial volume of devices. In its case against Google, the European Commission found that Google's exclusive dealing deterred innovation, saying that the agreements foreclosed competing search engines from "achiev[ing] the scale and access to users that would allow them to invest in research and development with respect to their specific features," and that this further reduced Google's incentive to innovate.<sup>143</sup>

Google's acquisition of Waze also likely stifled innovation. As discussed previously, Google's acquisition of Waze can be viewed as the acquisition of a maverick firm. By acquiring such a firm, Google eliminated its greatest and most innovative competitor in the mobile mapping market, thus reducing incentives to innovate themselves.<sup>144</sup>

## **VI. Google's Counterarguments are Inadequate**

Google has advanced justifications and counterarguments defending its business practices in the mobile device, online search, and digital mapping industries. While some of these arguments have more bite than others, an analysis of these claims suggests that, on balance, Google's contractual restrictions regarding Android, its exclusive contracts with OEMs, and its acquisition of Waze harm competition and consumers.

### *A. Google Android*

In response to the European Commission case, Google presented a number of justifications for the company's practices.

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<sup>143</sup> *Google EU Case*, *supra* note 10, at ¶¶ 1314-19.

<sup>144</sup> *See supra* Section IV.

First, Google noted that its MADAs are voluntary and that device manufacturers are free to use bare Android instead. Google argues that device manufacturers “can download the entire operating system for free, modify it how [they] want, and build a phone.”<sup>145</sup> While this defense is literally true—device manufacturers are not legally required to opt into Google’s MADAs and AFAs—it misses the point of Google’s tying strategy. As device manufacturers and experts note, OEMs cannot make commercially viable mobile devices without access to Google Play, YouTube, and other apps for which there are no suitable alternatives.<sup>146</sup> This has been borne out by the experiences of the few device manufacturers that have attempted, and failed, to market forked versions of Android.

Second, Google argued that device manufacturers can “freely add other apps” in addition to those in the GMS suite.<sup>147</sup> This is true in part and false in part. In some instances, Google has used revenue-sharing agreements to make Google Search the exclusive provider of general search services on many GMS-enabled devices. Even when this is not the case, however, Google Search must be set as the default search service on GMS-enabled devices under the terms of the MADA. Beyond Google Search, the MADA terms significantly weaken the incentive for other app-makers to have their apps pre-installed on GMS Android devices. Competing apps cannot achieve exclusivity on GMS Android devices, nor can they buy the prominent places occupied by GMS apps by fiat. Again, the choice presented to OEMs is largely an empty one, because Google has already seized the default ground and prominent app real estate.

Third, Google claims that it is “simple and easy” for users to personalize their devices and download apps that directly compete with Google’s on their own.<sup>148</sup> This position,

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<sup>145</sup> Walker, *supra* note 13.

<sup>146</sup> Edelman & Garadin, *supra* note 22, at 12.

<sup>147</sup> Walker, *supra* note 13.

<sup>148</sup> *Id.*

however, ignores the substantial effect of status quo bias on consumers.<sup>149</sup> Furthermore, user customizations do not allow competing app developers to pay to attract users as a larger collective, as would be possible by contracting with device manufacturers or carriers. Nor can app developers partially subsidize devices via user customizations.<sup>150</sup>

Fourth, Google explained that Android is “costly to develop, improve, keep secure, and defend against patent suits.”<sup>151</sup> As a result of these costs, Google asserts, it is necessary for Google to offset costs through the revenue generated on the GMS apps distributed via Android. As Edelman and Garadin argue, while Google is certainly permitted to operate a two-sided business, it cannot use this business model as a justification to eliminate competition:

Following Google’s logic, every two-sided business would be free to restrict competition on the free side of its business on the basis of the unsubstantiated claim that such restrictions stimulate demand for its fee-paying activities. Moreover, following Google’s logic, competition authorities would be prohibited from limiting or disallowing such restrictions. This mischaracterizes the state of competition law. While there is nothing inherently wrong in distributing Android for free, Google’s choice to do so cannot legitimize the company’s exclusionary tactics.<sup>152</sup>

#### *B. Google’s Exclusive Contracts*

Google is dominant in the online search industry: in early 2020, it has obtained 88.3 percent of the market share in aggregate searches in the United States, and an even more staggering 95.3 percent of all mobile search queries in the United States.<sup>153</sup> Google might contend that Google Search grew simply by offering a better search product than its rivals.<sup>154</sup> Google could also argue that, rather than stymieing innovation, it has been at the forefront of innovation. But Google’s exclusive, restrictive contracts belie these assertions: if consumers would prefer not to use a rival product, then Google would have no incentive to exclude them

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<sup>149</sup> See, e.g., Steve Lohr, *The Default Choice, So Hard to Resist*, N.Y. TIMES (Oct. 15, 2011), <https://www.nytimes.com/2011/10/16/technology/default-choices-are-hard-to-resist-online-or-not.html> (“Choice, in theory, is one click away. But most people, of course, never make that single click. Defaults win.”).

<sup>150</sup> Edelman & Garadin, *supra* note 22, at 174.

<sup>151</sup> Walker, *supra* note 13.

<sup>152</sup> Edelman & Garadin, *supra* note 22, at 174.

<sup>153</sup> *Search Engine Market Share in 2020*, OBERLO, <https://www.oberlo.com/statistics/search-engine-market-share>.

<sup>154</sup> *CMA Report*, *supra* note 79, at 6.

from doing so. Moreover, Google’s innovation claim relies almost entirely on extrapolation, for it is impossible to know what Google might be inventing if it faced real competition. Google might also maintain that its vertical integration has allowed it to realize technical efficiencies that benefit the consumer. However, as we and others have explained, Google’s vertical integration raises concerns over potential conflicts of interest. The company exploits its market power at one stage of the value chain and use it to undermine competition at other stages.<sup>155</sup>

Google also argues there are no significant barriers to entry—after all, Google was an upstart company that overtook billion-dollar companies like Microsoft and Yahoo!—and customers have no significant transaction costs in switching services.<sup>156</sup> However, Google’s anticompetitive behavior has given it extensive and exclusive data that excluded rivals cannot access, precluding them from competing on equal terms.<sup>157</sup> When Google first entered the market, there was no entrenched search engine with anything like the reach that Google has achieved—initially, by besting its competitors on the merits, but subsequently through erecting large and anticompetitive entry barriers. Google claims that competition is “a click away.”<sup>158</sup> But in practice, Google’s default requirements, exclusive contracts, and anticompetitive acquisitions have meant that the public will click in vain to find a true rival to Google Search.

### C. *Google’s Acquisition of Waze*

Google might argue that its acquisition of Waze has benefitted users by improving the quality of both Google Maps and Waze. By combining the breadth of data collected by both applications, both services improved their ability to speedily guide users to their destinations. Evidence suggests instead that over the past seven years since Google acquired Waze, Google has steadily, by piecemeal, integrated virtually all of Waze’s features into Google Maps,

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<sup>155</sup> *Id.* at 18.

<sup>156</sup> *But see* discussion of network effects, *supra* Section III.A.

<sup>157</sup> *Id.* at 6.

<sup>158</sup> Miguel Helft, *Google Makes a Case That It Isn’t So Big*, N.Y. TIMES (June 28, 2009), <https://www.nytimes.com/2009/06/29/technology/companies/29google.html>.

including its most distinctive characteristic—real-time reports on traffic from the app’s user community.<sup>159</sup>

But as the Horizontal Merger Guidelines note, the antitrust agencies only recognize merger benefits that could not have happened without the merger.<sup>160</sup> Here, there is reason to think that Google could have improved Maps without acquiring Waze—and therefore without quashing the maverick competition Waze brought to the market. Using its already immense share of location data and technical resources, Google could have examined Waze’s features and imitated or improved upon them without purchasing Waze. This would have allowed consumers to benefit from the competition of the two apps, and it would have kept the possibility open that other search engine providers could access users’ location data through Waze.

## VII. Legal Analysis

Google’s conduct, as described above, has clearly helped the company maintain and increase its market share in key digital markets. This Section analyzes Google’s conduct in the context of the U.S. antitrust laws. We conclude, first, that Google’s tying arrangements in the market for mobile operating systems and apps likely constitutes a Sherman Act Section 2 violation under the rule of reason. Next, we find that Google’s exclusive contracts with OEMs likely constitute prohibited foreclosure in violation of Sections 1 and 2 of the Sherman Act. Finally, we identify a number of ways that Google’s acquisition of Waze might be interpreted to violate Section 2 of the Sherman Act as well as Section 7 of the Clayton Act.

### A. *Google Android*

Section 2 of the Sherman Act prohibits “monopoliz[ing], or attempt[s] to monopolize, or combine or conspire with any other persons, to monopolize any part of the trade of

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<sup>159</sup> Suzanne Kelleher, *Did Google Just Deliver a Death Blow to Waze?*, FORBES (Oct. 21, 2019), <https://www.forbes.com/sites/suzannerowankelleher/2019/10/21/did-google-just-deliver-a-death-blow-to-waze/#51e876a018c4>.

<sup>160</sup> HORIZONTAL MERGER GUIDELINES, *supra* note 124, at § 10.

commerce among the several States.”<sup>161</sup> While courts have interpreted this language to proscribe a wide range of anticompetitive conduct, judges often struggle to differentiate illegal monopolization from market power acquired through legitimate competition on the merits. In *United States v. Grinnell Corp.*, the Supreme Court clarified the elements of illegal monopolization:

The offense of monopoly under § 2 of the Sherman Act has two elements: (1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident.<sup>162</sup>

*1. Possession of Monopoly Power in a Relevant Market*

To satisfy the first element, antitrust authorities must first define relevant product and geographic markets. Market definition is typically accomplished through statistical analysis that models the impact of a small but significant non-transitory increase in price (SSNIP) in a particular market. If the SSNIP test reveals that a price increase in a candidate market would drive a large enough number of consumers away as to be unprofitable, then the candidate market is rejected and a broader market is evaluated. The Supreme Court has noted that the relevant geographic market must “correspond to the commercial realities of the industry [and be] economically significant.”<sup>163</sup> With regard to product markets, the Court has explained that “[t]he outer boundaries of a product market are determined by the reasonable interchangeability of use or the cross-elasticity of demand between the product itself and substitutes for it.”<sup>164</sup>

Once both product and geographic markets are defined, plaintiffs must prove that the defendant possesses market power. Broadly speaking, the Supreme Court has defined monopoly power as the ability to “control prices or exclude competition.”<sup>165</sup> Courts have accepted a variety of evidence to show that defendants possessed such abilities. For example,

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<sup>161</sup> 15 U.S.C. § 2.

<sup>162</sup> *United States v. Grinnell Corp.*, 384 U.S. 563, 570–71 (1966).

<sup>163</sup> *Brown Shoe Co. v. United States*, 370 U.S. 294, 336–37 (1962) (specifically discussing geographic markets).

<sup>164</sup> *Id.* at 325.

<sup>165</sup> *United States v. E. I. du Pont de Nemours & Co.*, 351 U.S. 377, 391 (1956).

courts have accepted market share thresholds,<sup>166</sup> price leadership,<sup>167</sup> and the erection of barriers to entry,<sup>168</sup> among other metrics as evidence of monopoly power. Practically speaking, if a defendant does not possess dominant market share, a showing of possession of monopoly power is difficult to achieve under current law.

The Supreme Court has also recognized that market definition and proof of market power is not always required to bring a successful claim under Section 2 of the Sherman Act.

In *FTC v. Indiana Fed'n of Dentists*, the Court held that:

Since the purpose of the inquiry into market definition and market power is to determine whether an arrangement has the potential for genuine adverse effects on competition, 'proof of actual detrimental effects, such as reduction of output' can obviate the need for an inquiry into market power, which is but a 'surrogate for detrimental effects.'<sup>169</sup>

As a practical matter, however, courts have increasingly cabined the definition of anticompetitive effects and restricted such "quick look" analysis.

## 2. *Willful Acquisition or Maintenance of Monopoly Power*

Satisfaction of the first element of a Section 2 claim is sufficient to demonstrate market power, but it does not suffice to show that the market power was acquired illegitimately or illegally. Thus, to establish the second element of a Section 2 claim, a plaintiff must show that a defendant willfully acquired or maintained market power through some means other than competition on the merits. Such showing can be achieved in a number of ways. First, courts have found that anticompetitive conduct proscribed by other antitrust laws is sufficient to show willfulness under Section 2.<sup>170</sup> Second, if the challenged conduct is not illegal under other provisions of the antitrust laws, courts employ the rule of reason to determine whether conduct rises to the level of a section two violation. Employing the rule of reason, the Supreme Court has articulated a number of factors that bear on Section 2 legality. For example, the Supreme

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<sup>166</sup> See *Eastman Kodak Co. v. Image Tech. Servs., Inc.*, 504 U.S. 451 (1992).

<sup>167</sup> See *Novell, Inc. v. Microsoft Corp.*, 731 F.3d 1064 (10th Cir. 2013).

<sup>168</sup> See *McWane, Inc. v. F.T.C.*, 783 F.3d 814, 819 (11th Cir. 2015).

<sup>169</sup> 476 U.S. 447 (1986) (internal references omitted).

<sup>170</sup> See, e.g., *Eastman Kodak Co. v. Image Tech. Servs., Inc.*, 504 U.S. 451 (1992).

Court has formulated the question as asking whether the defendant attempted “to exclude rivals on some basis other than efficiency.”<sup>171</sup> In *Eastman Kodak* the Court examined whether “valid business reasons” underlie the defendant’s conduct.<sup>172</sup> More recently and most restrictively, the Court has articulated the question as being whether the conduct in question evinces “a willingness to forsake short-term profits to achieve an anticompetitive end.”<sup>173</sup>

Google’s conduct in the market for mobile operating systems and apps may well constitute a Section 2 violation under the rule of reason. By forcing OEMs to install certain versions of Android software to access its proprietary suite of apps, it attempts to gain share in the market for mobile operating systems on a basis other than the price or quality of the underlying software. Moreover, because Google could easily make its proprietary apps available in other app stores, on other operating systems, or on other versions of Android, it is hard to conceive of a valid business reason for restricting the GMS suite to a specific version of the Android software. Thus, under *Aspen Skiing* and *Eastman Kodak*, Google’s conduct regarding Android may constitute a violation of Section 2. Even under *Trinko*, Google’s decision to forsake possible short-term profits associated with its proprietary apps to increase sales of premium Android software may constitute a Sherman Act violation under the rule of reason.

*a) Tying*

Independent of Section 2 of the Sherman Act, the antitrust laws explicitly prohibit tying. Specifically, Section 3 of the Clayton Act proscribes the sale or lease of “goods, wares, merchandise, machinery, supplies or other commodities . . . on the condition, agreement or understanding that the lessee or purchaser thereof shall not use or deal in the goods . . . of a competitor or competitors.”<sup>174</sup> Section 3, however, only applies to the narrow category of

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<sup>171</sup> *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 605 (1985) (subsequently confined to its facts).

<sup>172</sup> *Eastman Kodak*, 504 U.S. at 483.

<sup>173</sup> *Verizon Commc’ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 399 (2004).

<sup>174</sup> 15 U.S.C. § 14 (2018).

transactions that are “sales” or “leases” of “commodities.”<sup>175</sup> Tying arrangements that fall outside of these categories are actionable under other provisions of the antitrust laws, namely Sherman Act Sections 1 and 2. It is worth noting that courts have held that Section 3 of the Clayton Act covers software specifically.<sup>176</sup>

The elements of a successful tying claim are virtually identical under both Clayton and Sherman Act causes of action. To establish a prima facie showing of a tying arrangement, a plaintiff must prove four elements. First, a plaintiff must show that the products and services in question are meaningfully distinct, such that there is independent demand for each product or service.<sup>177</sup> Second, plaintiffs must show that a defendant conditioned “the availability of the tying item on purchase or lease of the tied item or refraining from obtaining it from the defendant’s competitors.”<sup>178</sup> Third, plaintiffs must show that the defendant has market power sufficient to make the tying arrangement a significant restraint of trade.<sup>179</sup> Finally, the tying arrangement must pose a “not insubstantial” impact on the market for the tied item, typically assessed under the rule of reason.<sup>180</sup> If a plaintiff succeeds in establishing a prima facie case, the tying arrangement is presumed illegal and the burden shifts to the defendant to show that the arrangement is net procompetitive under the rule of reason.<sup>181</sup>

Under this standard, Google’s conduct may well constitute prohibited product tying. First, there is no question that the markets for mobile operating systems and mobile apps are distinct. Apps are frequently available on multiple operating systems, operating systems are tethered to mobile devices, and mobile applications are available from multiple sources within each operating system. Second, the analysis in Section II above clearly illustrates that Google conditioned the availability of the GMS suite of apps to a particular version of the Android

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<sup>175</sup> *Id.*

<sup>176</sup> *See, e.g.,* Blizzard Entertainment Inc. v. Ceiling Fan Software LLC, 941 F. Supp.2d 1190 (N.D. Cal. 2008).

<sup>177</sup> *Eastman Kodak*, 504 U.S. at 462.

<sup>178</sup> § 5:4.Tying and exclusive dealing involving “commodities”—Tying restraints, Holmes and Mangiaracina, *Antitrust Law Handbook* § 5:4.

<sup>179</sup> *Eastman Kodak*, 504 U.S. at 464.

<sup>180</sup> *Id.*

<sup>181</sup> *Cty. of Tuolumne v. Sonora Cmty. Hosp.*, 236 F.3d 1148, 1156 (9th Cir. 2001).

software. Although the third and fourth elements of a tying claim are more contestable, the analysis above also demonstrates that Google has significant share and power in the market for mobile operating systems and the markets for some of its proprietary apps (for example, its video streaming services via YouTube, and even more importantly its app store Google Play). The fourth prong likely presents the largest hurdle to a successful tying claim. The rule of reason confers a great deal of discretion on the judiciary to determine the substantiality of the competitive effects of Google's conduct. Our analysis leads us to conclude that the alleged tying arrangement did in fact have a substantial impact in the market for mobile operating systems.

*b) Bundling*

In bundling arrangements, a dominant firm conditions that sale of a product or service over which it has a monopoly on the sale of other products or services that are available from competitors. Because the monopoly product is "bundled" with competitive products, bundling can substantially reduce competition in the market for the competitive product. Courts have held that the practice can violate Section 2 of the Sherman Act.<sup>182</sup> Because bundling analysis occurs in the Section 2 context, the discussion of the elements of Section 2 claims apply to bundling cases. Thus, the extent to which Google's conduct may constitute illegal bundling is largely dependent on the Section 2 analysis above.

*B. Google's Exclusive Dealing*

Exclusive dealing arrangements are those agreements under which a seller agrees to sell all or most of the output of its product or service exclusively to a particular buyer or, conversely, under which a buyer agrees to buy all or most the input of its product or service exclusively from a particular seller. These types of arrangements are commonplace and can yield procompetitive results. However, when exclusive dealing arrangements foreclose

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<sup>182</sup> See, e.g., *LePage's Inc. v. 3M*, 324 F.3d 141 (3d Cir. 2003); *SmithKline Corp. v. Eli Lilly & Co.*, 575 F.2d 1056 (3d Cir. 1978).

competitors from inputs or outputs necessary to enter or remain in a market, they fall within the reach of the antitrust laws.

Several statutory provisions govern exclusive dealing involving services or intangible goods. Specifically, Section 1 of the Sherman Act prohibits contracts “in restraint of trade,”<sup>183</sup> and Section 5 of the FTC Act prohibits “[u]nfair methods of competition.”<sup>184</sup> A challenge may also be brought under Section 2 of the Sherman Act, which makes it illegal to “monopolize,”<sup>185</sup> if the defendant is a monopolist or near monopolist and uses exclusive dealing restraints to exploit their market power.

Because exclusive dealing can produce both pro- and anticompetitive results, such arrangements are analyzed under the rule of reason. This analysis relies on a number of considerations, discussed below, which bear on the legality of exclusivity arrangements. As applied to Google’s exclusive dealing, an analysis of these considerations leads us to conclude that Google likely violated Section 1’s prohibition of contracts in restraint of trade and Section 2’s prohibition of monopolization.

### *1. Market Definition*

Accurate market definition is a central factor in determining whether an exclusive dealing arrangement effectively forecloses competition, thus running afoul of the antitrust laws. As the Supreme Court stated in *Tampa Elec. Co. v Nashville Coal Co.*, “the relevant market is the prime factor in relation to which the ultimate question, whether the contract forecloses competition in a substantial share of the line of commerce involved, must be decided.”<sup>186</sup>

In its recent *Ohio v. Am. Express Co.* decision, the Supreme Court limited the definition of two-sided markets, like Google Search’s. The Court held that if both sides of a two-sided market are necessary for a transaction to occur, then the market definition must include both sides of the market. Proof of harm to one side of a two-sided market “cannot by itself

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<sup>183</sup> 15 U.S.C. § 1 (2000).

<sup>184</sup> *Id.* at § 45(a)(1).

<sup>185</sup> *Id.* at § 2.

<sup>186</sup> *Tampa Elec. Co. v. Nashville Coal Co.*, 365 U.S. 320, 329 (1961).

demonstrate an anticompetitive exercise of market power,” because such harm is merely a result of differences in the two parties’ demand elasticity.<sup>187</sup>

The relevant market for Google’s exclusive contracts—the mobile search engine market—is a two-sided market. As described above, Google Search uses a hidden revenue business model, a pattern for revenue generation in which users do not provide income directly to the service provider. Instead, the main source of revenue comes from third parties—advertisers—which cross-finance the free services that attract users. Thus, Google Search falls under the Supreme Court’s *Am. Express* standard, requiring a finding of harm to both consumers and advertisers to be liable under the antitrust laws.

While this dual harm requirement is a lofty bar to meet, we nevertheless believe Google’s exclusive dealing rise to antitrust scrutiny under the standard. As we have described, the monopolization of Google Search in the mobile search engine market, achieved in part through Google’s exclusive dealing, harms both consumers and advertisers. Consumers are harmed through declining product quality in the form of both the decreasing distinguishability of advertisements on the Google Search result pages as well as the decreasing privacy protection on the platform.<sup>188</sup> Advertisers are harmed by the increasing cost to advertise on the platform.<sup>189</sup> Thus, we believe Google’s exclusive dealing satisfy the *Am. Express* two-sided market definition standard.

## 2. *Foreclosure of Competition*

After the relevant market has been properly defined, the Court must determine whether the defendant has used its market power to foreclose a substantial portion of the market from its competitors. As Justice O’Connor explained in her concurring opinion in *Jefferson Parish Hospital District No. 2 v. Hyde*, “[e]xclusive dealing is an unreasonable restraint on trade only

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<sup>187</sup> *Ohio v. Am. Express Co.*, 138 S. Ct. 2274, 2287 (2018).

<sup>188</sup> *See supra* Section V.

<sup>189</sup> *See supra* Section V.

when a significant fraction of buyers or sellers are frozen out of a market by the exclusive deal.”<sup>190</sup>

While courts have not established strict threshold requirements of market foreclosure to find a violation of the antitrust laws, general guidelines have emerged. If the defendant is found to have foreclosed 10 percent or less of the relevant market, no violation will be found. Conversely, if the defendant is found to have foreclosed 50 percent or more of the relevant market, it is likely that the courts will find a violation.<sup>191</sup> The greater the percentage of the market foreclosed, the higher the likelihood that the defendant has exercised their market power to anticompetitive ends and violated the law.

Thus, the extent to which Google’s exclusionary conduct constitutes a Section 2 violation at least partially depends on the degree to which the conduct excluded competitors from the market. Available evidence suggests that in the mobile search engine context, Google’s exclusive contracts substantially foreclosed competition from competitors like Bing. By our estimation, nearly 100 percent of mobile devices in the United States have Google Search pre-installed as either the default or exclusive search engine provider. The CMA’s market study found that these exclusive contracts substantially hindered competition in the market for search.<sup>192</sup> Together, these exclusive contracts locked up a critical volume of searches from competitors. While further study is necessary to determine the precise percentage of the mobile search market which Google foreclosed through its exclusionary agreements, we believe this foreclosure likely rises to a level that constitutes Section 1 and Section 2 violations.

### 3. *Duration and Terminability of the Agreement*

The duration and terminability of exclusive dealing clauses are relevant considerations in determining the arrangements’ legality. Courts have found that even in exclusive contracts

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<sup>190</sup> *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 45 (1984) (abrogated in part on other grounds by, *Illinois Tool Works Inc. v. Independent Ink, Inc.*, 547 U.S. 28 (2006)) (O’Connor, J., concurring).

<sup>191</sup> Wanda Jane Rogers, Note, *Beyond Economic Theory: A Model for Analyzing the Antitrust Implications of Exclusive Dealing Arrangements*, 45 DUKE L.J. 1009, 1038-39 (1996).

<sup>192</sup> *CMA Report*, *supra* note 79, at 79-82.

that foreclosed a substantial portion of the relevant market, the arrangements would not be found to be anticompetitive if they were of relatively short duration or if the counterparty to such contracts had the ability to terminate the arrangement on relatively short notice.<sup>193</sup> By contrast, “contracts of sufficient duration to prevent meaningful competition by rivals”<sup>194</sup> and contracts that are not “terminable at will”<sup>195</sup> contribute to a finding of anticompetitive dealing. Although many of Google’s exclusive search contracts expired after a few years, they were not subject to unilateral termination by the counterparty.<sup>196</sup> Notably, some of these contracts are still in effect. Google’s recent exclusive contract with Apple is the most notorious example.

#### 4. *Evidence of Anticompetitive Intent*

Another consideration is whether evidence of anticompetitive intent exists in an exclusivity arrangement. For example, in *Geneva Pharmaceuticals Technology Corp. v. Barr Laboratories Inc.*, the Second Circuit reversed the district court’s order of summary judgment for the defendant on the basis of the defendant’s anticompetitive intent. The *Geneva Pharmaceuticals* court held that documentary evidence of an actual intent to use an exclusivity arrangement coupled with the use of deceptive tactics raised triable issues of the “anticompetitive effect” required for a Sherman Act Section 1 rule of reason claim and the “willfulness” required for a Section 2 monopolization claim.<sup>197</sup> Thus, evidence of anticompetitive intent can contribute to a finding of illegality in exclusive dealing cases.

Although intent is difficult to ascertain from publicly available documents, evidence suggests that Google may have entered into exclusive contracts with anticompetitive motives. For example, some statements revealed through prior litigation indicate that Google was motivated by concerns about competing search engines’ progress on mobile devices.<sup>198</sup> Additionally, the CMA report references a hypercompetitive environment in the market for

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<sup>193</sup> See *Methodist Health Servs. Corp. v. OSF Healthcare Sys.*, 859 F.3d 408, 410 (7th Cir. 2017).

<sup>194</sup> *ZF Meritor, LLC v. Eaton Corp.*, 696 F.3d 254, 271 (3d Cir. 2012).

<sup>195</sup> *PepsiCo, Inc. v. Coca-Cola Co.*, 315 F.3d 101, 111 (2d Cir. 2002).

<sup>196</sup> *CMA Report*, *supra* note 79, at 79-82.

<sup>197</sup> *Geneva Pharmaceuticals Technology Corp. v. Barr Laboratories Inc.*, 386 F.3d 485 (2d Cir. 2004).

<sup>198</sup> See *Android at 10*, *supra* note 63.

search engines around the time these contracts were entered.<sup>199</sup> Still, further discovery is necessary to confirm Google's intent.

### 5. *Offsetting Procompetitive Justifications*

Finally, courts weigh the potential procompetitive effects of exclusive dealing against their anticompetitive effects. In *Standard Oil Co. v. United States*, the Supreme Court outlined several ways in which exclusive dealing arrangements can be procompetitive. The Court explained that such contracts

may well be of economic advantage to buyers as well as to sellers, and thus indirectly of advantage to the consuming public. In the case of the buyer, they may assure supply, afford protection against rises in price, enable long-term planning on the basis of known costs, and obviate the expense and risk of storage in the quantity necessary for a commodity having a fluctuating demand. From the seller's point of view, [they] may make possible the substantial reduction of selling expenses, give protection against price fluctuations, and . . . offer the possibility of a predictable market.<sup>200</sup>

Lower courts, using the rule of reason, have permitted exclusive dealing where the procompetitive justifications outweighed the potential for anticompetitive consequences. For example, in *Race Tires Am., Inc. v. Hoosier Racing Tire Corp.*, the Third Circuit upheld an exclusive dealing arrangement even though more than 50 percent of the market had been foreclosed because the defendants presented plausible procompetitive justifications for the arrangement.<sup>201</sup> In *Barry Wright Corp. v. ITT Grinnell Corp.*, the First Circuit upheld an exclusive dealing under similar circumstances where the contracts were for short duration, reflected standard industry practice, and were justified by legitimate production and inventory objectives.<sup>202</sup> However, plaintiffs can rebut proffered justifications for exclusive dealing by presenting evidence that such justifications are either simply not true or that they are merely being used pretextually.<sup>203</sup>

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<sup>199</sup> CMA Report, *supra* note 79.

<sup>200</sup> *Standard Oil Co. of California v. United States*, 337 U.S. 293, 306–07 (1949) (citation omitted).

<sup>201</sup> 614 F.3d 57, 82 (3d Cir. 2010).

<sup>202</sup> 724 F.2d 227, 238 (1st Cir. 1983).

<sup>203</sup> *See supra* note 93, at 367–68.

As we have described in Section VI above, Google’s proffered or potential claims of efficiency do not hold water.<sup>204</sup> Rather than promoting innovation or enhancing quality, the firm’s exclusive dealing arrangements harm consumers and competition generally.

### C. *Google’s Acquisition of Waze*

This legal analysis examines the case against the Google-Waze acquisition, considering the market conditions that have developed since the transaction. Specifically, we focus on the unilateral effects that have arisen as a result of the acquisition. This analysis gives rise to three separate legal considerations: (1) the monopolization of location data, (2) the foreclosure of competitors from that location data, and (3) the elimination of a maverick from the mobile mapping market. We find that several innovative causes of action related to Google’s data monopolization might lead to a finding of anticompetitive conduct in violation of both Section 7 of the Clayton Act and Section 2 of the Sherman Act. Separately, Google could likely be held liable under Section 7 of the Clayton Act for the elimination of a maverick firm.

#### 1. *Monopolization of Data*

When contemplating the anticompetitive effects of data in an acquisition, a first consideration is how the merger would impact the market for user data. This analysis brings together concerns relevant to both Section 7 of the Clayton Act and Section 2 of the Sherman Act. It asks whether the transaction would leave the combined firm with substantially increased market power due to its possession of user data.

This analysis contemplates the possibility that data can constitute its own product market. FTC Commissioner Pamela Jones Harbour and Tara Isa Koslov have called for the agencies to analyze data markets “separate and apart from markets for the services fueled by these data.”<sup>205</sup> They see data as a raw material that can be manipulated—aggregated, tagged, or analyzed—and later sold as advertising services to other firms. In the supply chain for data,

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<sup>204</sup> See *supra* Section VI.

<sup>205</sup> Pamela Jones Harbour & Tara Isa Koslov, *Section 2 in a Web 2.0 World: An Expanded Vision of Relevant Product Markets*, 76 ANTITRUST L.J. 769, 773 (2010).

initial data collection should, in the opinion of Harbour and Koslov, be considered a distinct market from the later usage of that modified data. Additionally, Harbour and Koslov argue that separate markets for data would not only recognize the increased importance of data in the economy but would also reflect marketplace reality: “Internet-based firms often derive great value from user data, far beyond the initial purposes for which the data initially might have been shared or collected, and this value often has important competitive consequences.”<sup>206</sup> If location data could be considered a separate market, the antitrust authorities could more directly consider the enhanced market power—the share of location-based data—which Google obtained from its acquisition of Waze.

Defining data as its own market faces an uphill battle in the courts, however. Unless the data were actually being sold as a product—for example, in the form of data packages—it would be difficult to perform the hypothetical monopolist test or any demand substitution analyses between products for the purposes of market definition.<sup>207</sup> As Darren S. Tucker and Hill B. Wellford argue, “[p]ersonal information collected by a producer but not sold to customers cannot satisfy the hypothetical monopolist test or the *Brown Shoe* test: there is no sale, no customers, and no product substitution.”<sup>208</sup>

Nevertheless, there are some indications that U.S. antitrust authorities consider the anticompetitive effects of acquisitions based on data monopolization issues. One recent example of an acquisition challenged on data monopolization grounds is the DOJ’s investigation into Google’s acquisition of FitBit, a wearable fitness products company. According to Makan Delrahim, Assistant Attorney General for the Antitrust Division, Google’s acquisition of users’ health data and the privacy issues therein are a cause for antitrust concern. “It would be a grave mistake to believe that privacy concerns can never play a role in antitrust

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<sup>206</sup> *Id.*

<sup>207</sup> See Eliana Garcés & Daniel Fanaras, *Antitrust, Privacy, and Digital Platforms’ Use of Big Data: A Brief Overview*, 28 COMPETITION: J. ANTI., UCL & PRIVACY SEC. CAL. L. ASSOC. 23, 27 (2018).

<sup>208</sup> Darren S. Tucker & Hill B. Wellford, *Big Mistakes Regarding Big Data*, ANTITRUST SOURCE 5 (Dec. 7, 2014).

analysis,”<sup>209</sup> Delrahim said after the merging parties announced the acquisition. “Without competition, a dominant firm can more easily reduce quality—such as by decreasing privacy protections—without losing a significant number of users.”<sup>210</sup> While it is too early to know the outcome of the DOJ’s investigation into this acquisition, the investigation in and of itself shows that the agencies are aware that acquisition of data suppliers has the potential to harm competition in related markets. Applying this same logic to maps might provide a separate analytical basis for Section 7 liability regarding the Waze acquisition.

## 2. *Foreclosure of Competitors from Data*

A second, related consideration is whether the combined firm will have the ability to foreclose competitors from user data. In general, the U.S. antitrust agencies have been less willing to tackle this issue than their European counterparts. For example, the European Commission intervened in Microsoft’s acquisition of LinkedIn, a professional networking and social media service, due to concerns about the ability of the combined firm to foreclose competitors from professional networking data.<sup>211</sup> The remedy in this case provided a way for LinkedIn’s competitors to access data collected on the platform.<sup>212</sup> More recently, the Commission challenged Apple’s acquisition of Shazam, an application that identifies music and other media based on short samples.<sup>213</sup> While the Commission expressed concerns about Apple’s ability to foreclose data about consumer’s preferences from rivals in the music industry, they ultimately approved of the acquisition. It remains unclear how willing U.S. antitrust authorities are to challenge acquisitions based on similar concerns.

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<sup>209</sup> Adi Robertson, *The Justice Department Will Reportedly Investigate Google’s Fitbit Acquisition*, THE VERGE (Dec. 10, 2019), <https://www.theverge.com/2019/12/10/21009870/justice-department-doj-google-fitbit-acquisition-antitrust-review-data-privacy-ftc>.

<sup>210</sup> *Id.*

<sup>211</sup> See Garcés & Fanaras, *supra* note 111, at 23.

<sup>212</sup> *Id.*

<sup>213</sup> *Id.*

### 3. *Elimination of a Maverick*

Section 7 of the Clayton Act prohibits mergers and acquisitions where the effect “may be substantially to lessen competition, or to tend to create a monopoly.”<sup>214</sup> One way in which a horizontal merger can reduce competition is through the elimination of a maverick firm. According to the Horizontal Merger Guidelines, a maverick firm is a company that “plays a disruptive role in the market to the benefit of customers.”<sup>215</sup> As a part of the merger review process, the DOJ and FTC consider whether an acquisition is likely to eliminate such a firm from the market. For example, when a market entrant uses new technology or an innovative business model to challenge an incumbent, a merger between the two firms can lead to a loss of competition and may result in antitrust scrutiny. The economic analysis of the acquisition in Section IV suggests that Waze’s unique technology (crowdsourced mapping) will have posed a competitive threat to Google’s map offering. Thus, the acquisition may well have been motivated by a desire to eliminate a nascent competitor in violation of Section 7.<sup>216</sup>

## **VIII. Conclusion**

In the mid-2000s, the world’s dominant search engine faced an existential challenge: the rise of the smartphone. Perfectly designed for desktop searching, Google Search needed to make the leap to mobile or risk obsolescence. Google carried off the move brilliantly, to the tremendous profit of its shareholders. But Google retained its search monopoly not only through out-programming its rivals, but by strategically excluding them from key mobile markets. By leveraging its market power in the Android app store market and the licensable smartphone operating system market, engaging in exclusive dealing, and acquiring Waze (among other nascent rivals), Google walled itself off from competition—and walled consumers in to its monopoly. With each of these strategic steps, Google safeguarded its

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<sup>214</sup> 15 U.S.C. § 18 (2018).

<sup>215</sup> HORIZONTAL MERGER GUIDELINES, *supra* note 124, at § 2.1.5.

<sup>216</sup> See also Doni Bloomfield, *Getting to “May Be”: Probability, Potential Competition, and the Clayton Act* (working paper 2020), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3589820](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3589820), manuscript at 25-26; C. Scott Hemphill & Tim Wu, *Nascent Competitors*, U. PA. L. REV. (forthcoming 2020).

monopoly over the search engine market. The tying arrangements associated with Android enhanced Google's intake of user data and made Google Search the default search engine on all GMS-enabled devices. Google's exclusive contracts with OEMs further expanded the number of devices on which Google Search was the default option and went a step further by making Google Search the exclusive search engine on a substantial number of devices. Finally, Google's acquisition of Waze provided it with valuable user location data while starving potential competitor search engines of that data.

As we have shown, these strategies benefited Google to the detriment of competition and consumers. And they are precisely the type of conduct the antitrust laws were designed to stop—the monopolist's abuse of its market position.