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## MARKET POWER AND SWITCHING COSTS: AN EMPIRICAL STUDY OF ONLINE NETWORKING MARKET

*Shin-Ru Cheng\**

### I. INTRODUCTION

Digital platforms have a profound influence on our lives. Specifically, online networking platforms are actively involved in our social activities<sup>1</sup> and have morphed into significant information centers, providing more convenient ways to learn about the world.<sup>2</sup> Although there are countless digital platforms, ten networks are dominating the digital space. Based on 2019 statistics, the top ten social networking platforms in the United States, measured by the number of monthly users, are Facebook, Instagram, Facebook Messenger, Twitter, Pinterest, Reddit, Snapchat, WhatsApp, Messenger by Google, and Tumblr.<sup>3</sup>

Facebook owns four of the top ten platforms. It controls Instagram, Facebook Messenger, and WhatsApp,<sup>4</sup> covering the vast majority of the market. Facebook generated \$85,965 million in 2020,<sup>5</sup> and the company's chief executive officer, Mark Zuckerberg, has become one of the wealthiest entrepreneurs on the planet.<sup>6</sup> His wealth could be used unjustly if Facebook takes advantage of market failure instead of providing services in a more productive way.<sup>7</sup> Therefore, it is essential to identify what causes markets to fail, examine what would occur if the tech market

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1. See SCOTT GALLOWAY, *THE FOUR: THE HIDDEN DNA OF AMAZON, APPLE, FACEBOOK, AND GOOGLE*, at 100-04 (2017).

2. See Malwina Popio, *The Role of Facebook in the Process of Acquiring Information* INT. J. EDUC. CULT. SOC. NO 1 2015, 24-25 (2015).

3. See *Most popular mobile social networking apps in the United States as of September 2019, by monthly users*, STATISTA (Jul. 6, 2021), <https://www.statista.com/statistics/248074/most-popular-us-social-networking-apps-ranked-by-audience/> (last visited Sept. 17, 2021).

4. See Facebook, *Annual Report (Form 10-K)*, 3 (Jan. 28, 2021).

5. *Facebook's Annual Revenue from 2009 to 2020*, STATISTA (Feb. 5, 2021), <https://www.statista.com/statistics/268604/annual-revenue-of-facebook/>.

6. See *Forbes World's Billionaire List: The Richest in 2021*, (Kerry A. Dolan et al. eds.) FORBES (2021), <https://www.forbes.com/billionaires/> (choose "Mark Zuckerberg" from dropdown; then click "Full Profile").

7. Unlike profits gained from productive behaviors, the artificial profits (also called "rent") generated by exploiting market failure results in income inequality. See GERRIT DE GEEST, *RENT: HOW MARKETING CAUSES INEQUALITY*, 4-6 (2018).

failed, and take action to remove market distortions.<sup>8</sup>

Facebook's overwhelming dominance<sup>9</sup> in the marketplace has attracted multiple antitrust investigations. Authorities are concerned that "Facebook may have put consumer data at risk, reduced the quality of consumers' choices, and increased the price of advertising."<sup>10</sup> Furthermore, several scholars are encouraging these investigations into Facebook's data harvesting activities.<sup>11</sup> Based on the concerns of policymakers, the number of antitrust investigations implicating Facebook and other online networking platforms will likely increase.

The Sherman Act guides all antitrust inquiries in the United States. Section 2 of the Sherman Act makes unlawful, conduct that "cause[s] an increase in market power...that is not competition on the merits."<sup>12</sup> Accordingly, to prove Facebook violated Section 2 of the Act, a complainant would have to demonstrate that Facebook acquired monopoly power,<sup>13</sup> referring to a substantial level of market power.<sup>14</sup> Alternatively, one can prevail upon showing "a dangerous probability of achieving monopoly power."<sup>15</sup>

Based on this definition, antitrust inquiries depend upon an accurate definition of a commercial entity's market power. Traditionally, market power was defined as "a firm's ability to increase profits by reducing output and charging more than a competitive price for its products."<sup>16</sup> To

8. *Id.* at 5. The author has indicated several methods that a company may employ to distort market competition, such as reducing market transparency, exploiting non-informed consumers, lock-in effects and network externalities, and exploiting human beings' irrationality. *Id.* at 3.

9. Based on social media site visits, Facebook has nearly 71.8 percent market share in the United States. *See Leading Social Media Websites in the United States in May 2021, Based on Share of Visits*, STATISTA (Jun. 17, 2021), <https://www.statista.com/statistics/265773/market-share-of-the-most-popular-social-media-websites-in-the-us>.

10. *See* Annie Palmer, *47 Attorneys General Are Investigating Facebook For Antitrust Violations* CNBC (Oct. 22, 2019, 11:07 AM), <https://www.cnbc.com/2019/10/22/47-attorneys-general-are-investigating-facebook-for-antitrust-violations.html>.

11. *See, e.g.*, Diana Srinivasan, *The Antitrust Case Against Facebook: A Monopolist's Journey Towards Pervasive Surveillance in Spite of Consumers' Preference for Privacy* 16 BERKELEY BUS. L. J., 98-101 (2019); Keith Hylton, *Digital Platforms and Antitrust Law* 98 NEB. L. REV. 272, 296.

12. A. Douglas Melamed, *Antitrust Law Is Not That Complicated*, 130 HARV. L. REV. F. 163, 166 (2017).

13. *United States v. Microsoft Corp.*, 253 F.3d 34, 45 (D.C. Cir., 2001) ("Section 2 of the Sherman Act makes it unlawful for a firm to 'monopolize' 15 U.S.C. § 2. The offense of monopolization 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 product, business acumen, or historic accident" (citation omitted)).

14. *See* Mark R. Patterson, *Google and Search Engine Market Power*, HARV. J. L. & TECH. 1, 6 (2013).

15. *Spectrum Sports, Inc. v. McQuillan*, 506 U.S. 447, 456 (1993). (reasoning that establishing attempted monopolization requires proof "(1) that the defendant has engaged in predatory or anticompetitive conduct with (2) a specific intent to monopolize and (3) a dangerous probability of achieving monopoly power.").

16. *See* HERBERT HOVENKAMP, *FEDERAL ANTITRUST POLICY THE LAW OF COMPETITION AND ITS*

concretize this abstract definition, various approaches have been proposed. The market share approach<sup>17</sup> and the entry barriers approach<sup>18</sup> are the two most frequently adopted by courts. Less frequently, courts adopt the switching costs approach and various other methods, which rely on market structures or correlations between prices and costs.

In *United States v. Microsoft*,<sup>19</sup> the United States Court of Appeals for the D.C. Circuit applied the switching costs approach to assess the market power of an online networking platform. In simple terms, the switching costs approach infers market power based on consumers' abilities to switch from one provider to another.<sup>20</sup>

The switching costs approach is suitable for assessing the market power of Facebook because, in the absence of exterior competition and presence of high entry barriers, the ability to switch within a market is a critical mechanism to facilitate competition.<sup>21</sup> In fact, this approach has been used in several other cases related to digital products.<sup>22</sup>

Courts have recognized the utility of this approach in the context of

PRACTICE, 106 (2016).

17. Several approaches have been advanced by courts. The market share approach is accepted by courts and regulatory agencies. It can be applied to a wide variety of markets. See U.S. DEP'T OF JUSTICE, COMPETITION AND MONOPOLY: SINGLE-FIRM CONDUCT UNDER SECTION 2 OF THE SHERMAN ACT, 21 (2008). The approach determines the market power by relying on firms' market share, which offers a straightforward and practical method for trial purposes. *Id.* at 21-25.

18. The other commonly utilized method is the entry barriers approach, first mentioned by the Supreme Court in 1992. See *Eastman Kodak Co. v. Image Technical Servs.*, 504 U.S. 451, 485 (1992). The approach focuses on the possibility of entering the market at issue. Specifically, the approach claims that if potential competing firms can easily enter the market, or the existing firms can expand output to the market without significant difficulties, the market is competitive, regardless of the market concentration. This is because challenges from current and potential competing firms frustrate the monopolists' efforts to set super-competitive prices.

19. To prove that Microsoft (defendant) had monopoly power, the Department of Justice (Plaintiff) showed that Microsoft owned more than 95 percent of market share in Intel-compatible operating system. Furthermore, more than 7000 Microsoft applications were unavailable in competing operating systems (such as Mac OS). This constituted a substantial compatibility switching cost. *United States v. Microsoft Corp.*, 253 F.3d 34, 55-56, 60 (D.C. Cir., 2001). The Court found Microsoft's monopoly power on the ground that "customers would not switch from Windows to a Mac OS in response to a substantial price increase because of the costs of acquiring the new hardware needed to run Mac OS (an Apple computer and peripherals) and compatible software applications, as well as because of the effort involved in learning the new system and transferring files to its format." *Id.* at 52.

20. See generally, *Universal Avionics Sys. Corp. v. Rockwell Int'l Corp.*, 184 F. Supp. 2d 947, 955 (D. Ariz. 2001).

21 Here, Facebook's interior competition refers to the competition among existing online networking platforms, such as Instagram, Twitter, and Snapchat. Due to the presence of entry barriers, potential entrants could not pose a threat to Facebook. Therefore, interior competition plays a much more important role in maintaining market competition.

22 See Aaron S. Edlin & Robert G. Harris, *The Role of Switching Costs in Antitrust Analysis: A Comparison of Microsoft and Google*, 15 YALE J. L. & TECH. 169, 189-91 (2013). Edlin and Harris concluded that switching costs play an essential role in antitrust law analysis in three dimensions: (1) narrowing market definition (2) assessing market power; and (3) exclusionary conduct. *Id.*

online networking platforms. For example, in *Microsoft*, the court concluded that Microsoft had monopoly power in the operating systems market based on the switching costs approach, holding that high switching costs in Microsoft's operating system constituted substantial entry barriers.<sup>23</sup> These entry barriers, in turn, indicated a substantial level of market power. Going forward, researchers should apply the switching costs approach to measure the market power of other online networking platforms.

Accordingly, this Article presents the author's own empirical study ("the study") that analyzes Facebook's market power under the switching costs approach. The study examines users' switching behaviors in response to significant changes in Facebook's service quality. As an initial hypothesis, the study assumes that if users are able to switch to other platforms because of Facebook's inferior service, then low or moderate switching costs in the market can be inferred. The study determines that, under the switching costs approach, Facebook would not have sufficient market power to constitute a violation of Section 2 of the Sherman Act.

Part II of this Article addresses the role of switching costs analyses in antitrust investigations. Part III presents the author's study, illustrating the empirical methodology, including data collection and analysis. Part III also provides several observations regarding application of the switching costs approach to guide decisionmakers in their analysis of the market power of other digital platforms. Finally, Part IV summarizes the main findings of the study.

## II. LOCK-IN EFFECTS AND MARKET POWER

According to the switching costs approach, firms gain a large market share by locking-in users through significant exit costs.<sup>24</sup> These exit costs may originate from market structures or firms' policies. The costs, in turn, create market barriers for new entrants.<sup>25</sup> In this regard, this Part explains the economic concept of switching costs and resulting lock-in effects as

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23. See *Microsoft*, 253 F. 3d, at 19-24.

24. Jiawei Chen & Michael Sacks, *Reimbursing Consumers' Switching Costs in Network Industries*, NET INSTITUTE WORKING PAPER NO. 16-13, 1 (2016).

25. Joseph Farrell & Paul Klemperer, *Coordination and Lock-in: Competition With Switching Costs and Network Effects*, in 3 HANDBOOK OF INDUS. ORG. 1967 1974, 1998-2001, (M. Armstrong & R. Porter eds., 2007). Paul Klemperer, *Entry Deterrence in Markets with Consumer Switching Costs* 97 ECON. J. 99, 99 (1987) [hereinafter Klemperer, *Entry Deterrence*]. Paul Klemperer, *Competition When Consumers Have Switching Costs: An Overview with Applications to Industrial Organization Macroeconomics, and International Trade*, 62 REV. ECON. STUD. 515, 536 (1995) [hereinafter Klemperer, *Competition*]. Pei-yu Chen & Lorin M. Hitt, *Information Technology and Switching Costs* 9 (2005), available at <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.458.1995&rep=rep1&type=pdf>.

well as how online networking platforms may produce switching costs.

### A. Switching Costs and Lock-In Effects

The presence of switching costs can be observed through several examples, such as buyers having to repeatedly purchase similar products from the same supplier. In another scenario, buyers would have to “purchase follow-on products such as service and repair” from the same supplier.<sup>26</sup> Switching costs can come from various sources, including market structures and product designs.<sup>27</sup>

Switching costs play a crucial role in consumption decisions. Economic research has highlighted, based on switching costs, the correlation between a product’s utility level and purchasing decisions.<sup>28</sup> For example, imagine that there are two customers: A and B. In this scenario, A purchased product X based on the product’s utility level. In addition to product X, consumers may purchase product Y. There are two periods in which consumers may decide which product to purchase.<sup>29</sup>

In each period, customers A and B have three options: purchase X, purchase Y, or make no purchase at all.<sup>30</sup>  $u$  stands for utility.  $u_p^C$  stands for the utility the customer gained from purchasing the product.  $S$  stands for switching costs and  $\emptyset$  stands for the product.  $S_{\emptyset p}^C$  stands for the switching costs associated with purchasing the product. Conversely,  $S_{p\emptyset}^C$  stands for the switching costs associated with not purchasing the product. The utilities of each decision in period A are as follows.<sup>31</sup>

Action	Customer A	Customer B
Purchase X	$u_X^A$	$u_X^B - S_{\emptyset X}^B$
Purchase Y	$u_Y^A - S_{XY}^A - S_{\emptyset Y}^A$	$u_Y^B - S_{\emptyset Y}^B$
No Purchase	$- S_{X\emptyset}^A$	0

The chart illustrates that, compared to customer B who has no previous experience purchasing X, customer A tends to purchase X because the switching costs are  $S_{XY}^A$  and  $S_{\emptyset Y}^A$ . Accordingly, A will decide to switch from product X to product Y only if the utility of product Y is higher than A’s switching costs— $S_{XY}^A$  and  $S_{\emptyset Y}^A$ . Therefore, “[a]n excellent product

26. See Farrell & Klemperer, *supra* note 25, at 1972.

27. See Edlin & Harris, *supra* note 22, at 176.

28. See Chen & Hitt, *supra* note 25, at 4-6.

29. *Id.* at 4.

30. *Id.*

31. *Id.* at 5.

can have poor sales if customers face high switching costs.”<sup>32</sup> By contrast, switching costs may maintain a low quality product’s competitive advantage.<sup>33</sup>

Lock-in effects occur when there are “switching costs that are sufficiently high so that buyers stay with a current supplier rather than switching to a supplier whose products they consider to be preferable (or, alternatively, that the costs of switching suppliers exceed the benefits of switching).”<sup>34</sup>

In practice, locking-in customers is a common business strategy to retain customers—of course, in addition to providing superior products.<sup>35</sup> This is particularly true in markets where fixed costs and the costs associated with obtaining new customers are particularly high.<sup>36</sup> For the former, firms need switching costs to retain a minimum number of customers to cover fixed costs; for the latter, switching costs attract new customers in an affordable manner. Information-related industries highlight how switching costs influence profitability,<sup>37</sup> a point discussed below in reference to Facebook.

### *B. Switching Costs in the Online Networking Market*

At first glance, it seems that switching among online networking platforms is an effortless process for consumers. Technically speaking, users can leave Facebook with the click of a button. Additionally, Facebook does not set switching restrictions—neither contractually nor through its practices. Switching to other online networking platforms is free for consumers. Moreover, Facebook users are able to download their own personal data from the website.<sup>38</sup> Complete data migration, moving data from one platform to another, ensures that users’ important digital documents will not be lost during the process of switching to another platform.

However, some features of Facebook suggest the opposite. Leaving Facebook may create substantial switching costs for businesses and

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32. *Id.* at 7-8.

33. *Id.* at 8.

34. *See* Edlin & Harris, *supra* note 22, at 176.

35. *See* Chen & Hitt, *supra* note 25, at 443, (noting that “a firm can be successful at retaining customers either because they offer superior products (at least for a specific set of consumers), or because they have high switching costs.”).

36. *Id.* at 438.

37. *Id.*

38. *Accessing & Downloading Your Information*, FACEBOOK, [https://www.facebook.com/help/1701730696756992?helpref=hc\\_global\\_nav](https://www.facebook.com/help/1701730696756992?helpref=hc_global_nav) (last visited Sept. 17, 2021). [In some jurisdictions, Facebook has an obligation to port users’ data to appointed platforms upon request.]

individual users, including compatibility costs, uncertainty costs, and learning costs. Literature in the field of economics has identified several types of switching costs.<sup>39</sup> The following Sections discuss the types of switching costs and switching costs' impact on the online networking market.

### 1. Search Costs

Search costs are incurred in the process of finding and understanding new suppliers.<sup>40</sup> Search costs depend on the degree of transparency in the market. The securities market is comparatively transparent because various security regulations require issuers to disclose relevant and important information to investors. Similarly, the insurance market and other highly regulated industries that impose mandatory disclosure requirements on companies tend to be more transparent. Accordingly, search costs are low in these markets.

Search costs are induced if comparing prices between products becomes harder for consumers. Big data analysis technologies are growing in sophistication. Consequently, online shopping platforms can capture consumers' consumption preferences more precisely and generate personalized prices at no cost.<sup>41</sup> Because personalized prices are set depending on the willingness of individual consumers to purchase products, such products lose their standard prices for comparison purposes. As a result, it is difficult for consumers to determine whether prices are fair, and additional resources are usually necessary for consumers to obtain relevant information about such products.

Moreover, search costs can be induced through product design. Sellers can design several types of products with similar functions to promote more transactions. A common example of this practice is the sale of cookies. Companies sell different types of cookies in different boxes with varying prices. This strategy makes comparing the products futile.

This rather simple example of a cookie box can also apply to online networking platforms. Facebook provides personalized services to each user. For example, Facebook recommends "friends" to a specific user depending on the user's already-existing friend network. Facebook also displays personalized news and sends targeted advertisements.

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39. See Edlin & Harris, *supra* note 22, at 178.

40. *Id.* at 181. See also Chen & Hitt, *supra* note 25, at 446.

41. See CARL SHAPIRO & HAL R. VARIAN, INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY 37 (1998). Price strategies include: (1) personalized pricing to "[s]ell to each user at a different price"; (2) versioning to "[o]ffer a product line and let users choose the version of the product most appropriate for them"; and (3) group pricing to "[s]et different prices for different groups of consumers, as in student discount." *Id.* at 39.

Additionally, it allows users to customize privacy settings. Because of these personalized services, each individual user may have a different experience with Facebook. Consequently, the seeming uniqueness of each Facebook account makes it difficult to undertake a comparison of users' experiences on the platform.<sup>42</sup>

It is noteworthy that consumers having additional information does not necessarily translate into a reduction in search costs. This observation is particularly relevant to online networking platforms. For example, Facebook publishes privacy policies on its website, and users can easily access these policies. Given that the policies are written in legal jargon with lengthy and detailed sentences, readers must spend considerable time reading them to understand them. Errors in readers' interpretations of these clauses should therefore be expected.<sup>43</sup>

## 2. Compatibility Costs

The second type of switching costs arises because of products' incompatibilities with various other products. When a current product is incompatible with a new product, buyers are often required to obtain follow-on products from the same seller. Without follow-on products, the buyer may lose the current product's utility.<sup>44</sup> In this scenario, the utility lost is a compatibility cost. For example, when a cellphone buyer chooses Apple's iPhone, the buyer is locked into follow-on products designed by Apple, such as the App Store, Apple-compatible chargers, and other accessories.

Recent research suggests that network effects are strong in the online networking market. Thus, users who contemplate switching to other platforms face significant compatibility costs. Network effects refer to when a product's value increases as more people use the product. Network effects arise in markets where "every adoption thus complements every other."<sup>45</sup> For example, Facebook's overall value

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42. In a transparent market, information products price competition will ultimately reduce price to zero. The reason is that in such a market, "competitive forces tend to move the price toward marginal cost, the cost of producing an 'addition' copy," which is close to zero for information products. *Id.* at 24-25. To avoid cut-throat price competition, firms must differentiate products or "achieve cost leadership." *Id.* at 32-33.

43. Johnson's empirical research investigated 10,000 Internet household and three commodity-like products and found that "households visit only 1.2 book sites, 1.3 CD sites, and 1.8 travel sites", which shows "the amount of online searches is actually quite limited." See Eric J. Johnson, et al., *On the Depth and Dynamics of Online Search Behavior*, 50 MGMT. SCI. 299, 299 (2004). This suggests that even though the Internet has made information more accessible to customers, additional information does not necessarily promote more switching and lead to price or quality competition.

44. See Edlin & Harris, *supra* note 22, at 178. See also Klemperer, *Competition*, *supra* note 25, at 517.

45. See Farrell & Klemperer, *supra* note 25, at 2007. See also Edlin & Harris, *supra* note 22, at

increases when additional users join the network; those users contribute more information to Facebook's ecosystem, which makes the website more attractive to non-users.<sup>46</sup> Indeed, because of network effects, Facebook has become the largest online networking platform in the United States. Therefore, once Facebook users switch to other platforms, they lose opportunities to engage with existing users.

For businesses, leaving Facebook for another platform may involve significant financial losses. A great number of businesses rely on Facebook to advertise their products. At the same time, consumers count on Facebook to seek out relevant products and businesses.<sup>47</sup> Hence, businesses have to establish their presence on Facebook. They must build their reputation, promote their products, and foster client relationships. All of this requires major upfront commitments. Therefore, leaving Facebook is equivalent to abandoning established connections with consumers. Because of their fear of losing established networks, businesses are discouraged from switching to other online networking platforms. The same response is observed in non-business users. Non-business Facebook users may spend years building their own friendship networks and personalized homepages with unique personal images. These individuals may use Facebook as their primary tool for communicating with friends. At present, there is no comparable alternative to Facebook. Thus, users may feel socially isolated if they leave the platform. As a result, while Facebook allows users to transfer their data to other platforms, this data may be useless if it cannot be easily stored and managed on another online networking platform.<sup>48</sup> Therefore, compatibility costs resulting from switching to other online networking platforms may be inevitable.<sup>49</sup>

As discussed above, personalized services implicate compatibility costs. Data-driven businesses provide personalized services<sup>50</sup> to meet

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178 (arguing "the benefits of adoption by any single user increases as other consumers adopt").

46. *About Marketplace for Business*, FACEBOOK, <https://www.facebook.com/business/help/289268564912664?id=150605362430228>.

47. *Id.*

48. In practice, Facebook has launched policies allowing users to transfer their personal data across platforms, such as transferring photos on Facebook to Google Photos. William Morland, *Data Transfer Project: Enabling portability of photos and videos between services*, FACEBOOK, <https://engineering.fb.com/2019/12/02/security/data-transfer-project/>. However, these policies are insufficient to conclude that cross platform data transfers have reduced entry barriers. More importantly, it is not certain whether Facebook will allow its competing platforms to request a large-scale data transfers on behalf of users.

49. Scholars classify the costs incurred due to data portability as transaction costs. See Edlin & Harris, *supra* note 22, at 181.

50. Firms can identify their customers' preferences by relying on the following tools: "cookie, log files, data mining technologies, customer profiling techniques, collaborative filtering technologies (e.g., recommendation systems) and other personalization technologies." See Chen & Hitt, *supra* note 25, at 454.

their users' personal needs.<sup>51</sup> As a result, when users leave these data-rich environments, they lose the value of such personalized services.<sup>52</sup>

### 3. Transaction Costs

Transaction costs are costs incurred in the course of a transaction, including the money, time, and effort spent on transacting.<sup>53</sup> Transaction costs are inevitable. These costs deter consumers from switching to other products when it is unclear the expected gains of switching exceed potential transaction costs.<sup>54</sup>

Indeed, modern technology reduces transaction costs. For example, in the past, traders spent much time and effort traveling from one place to another to complete transactions. Modern communication technologies make remote communication possible. Facebook Messenger and other communication applications offer a free and convenient way for traders to communicate with their clients. Accordingly, travel is no longer necessary to make important communications.

Modern technologies also simplify business transactions.<sup>55</sup> For example, some websites allow users to create accounts on their platform with Facebook identities, saving the time it would take to create a new account and change the platform's default settings to the user's preferences.<sup>56</sup>

Conversely, technological developments have *created* new types of transaction costs. For example, because each online networking platform adopts different formats to store and organize data, technical barriers can deter data sharing and portability. Until solutions to these issues are discovered, users who migrate between platforms must accept higher transaction costs.<sup>57</sup>

### 4. Learning Costs

When receiving a new product, one has to learn how it functions.<sup>58</sup> All

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51. *Id.* See also Rory Van Loo, *Digital Market Perfection*, 117 MICH. L. REV. 815, 827, 829 (2019) (noting regular customers can use companies' artificial intelligent algorithms to recommend "where to buy the products, evaluate their price and quality, and update the consumer along the way or give preapproval notifications if preferred").

52. Chen & Hitt, *supra* note 25, at 454.

53. See Edlin & Harris, *supra* note 22, at 181. See also Paul Klemperer, *Markets with Consumer Switching Costs* 102 Q. J. ECON. 375, 375 (1987) [hereinafter Klemperer, *Switching Costs*].

54. See Edlin & Harris, *supra* note 22, at 181.

55. See Chen & Hitt, *supra* note 25, at 446.

56. See Edlin & Harris, *supra* note 22, at 181.

57. *Id.*

58. *Id.* at 182; see, e.g., Klemperer, *Switching Costs*, *supra* note 53, at 375; Klemperer,

the effort, time, and resources spent on familiarizing oneself with a product are learning costs. Research suggests that the degree of products' significance and distinction,<sup>59</sup> customers' familiarities,<sup>60</sup> as well as customers' frequencies of repurchases,<sup>61</sup> are positively correlated with learning costs.

Learning how to use new online networking platforms may be challenging for some users. Every platform has its own layout and different functions. For those who use social networking applications less often, learning how to use a new platform can be time-consuming.

Learning costs vary between individuals. For example, younger users who grew up with the Internet may spend less time learning how to set up personal profiles on different online networking platforms. In fact, most teenagers have access to multiple social networking applications from their smartphones.<sup>62</sup> By contrast, older generations may face difficulties joining new networking platforms. As a result, a period of adjustment is to be expected in certain situations when users must learn how to use a new product.

### 5. Contractual Costs

Contractual costs refer to losses incurred if contractual obligations are violated. Awards and punishments are two common contractual cost approaches that businesses employ to strengthen relationships with customers.<sup>63</sup>

For example, businesses establish loyalty programs to award existing customers. By providing benefits to loyal customers, the program encourages these customers to maintain long-term relationships with the business. Various rules guide these programs. For example, customers

*Competition*, *supra* note 25, at 517.

59. See Edlin & Harris, *supra* note 22, at 182. A study posits that “[t]he more significant the differences are across products, and the longer or more concentrated the efforts required to learn how to use a different product, the greater the costs of switching between products.” *Id.*

60. Some empirical studies emphasize the level of familiarity with a website and purchasing rate. Bucklin and Sismeiro investigated the correlation between website browsing behaviors and the length of time spent on each page, finding that the more frequently the browsers visit a website, the longer time they spend on it. This finding reflects the fact that efforts to be familiar with new websites discourage switching. See Randolph E. Bucklin & Catarina Sismeiro, *A Model of Web Site Browsing Behavior Estimated on Clickstream Data*, 40 J. MKTG. RES. 249, 249 (2003).

61. Moe and Fader focus on visit frequency and purchasing rate. They found evidence that “people who visit a retail site more frequently have a greater propensity to buy.” See Wendy W. Moe & Peter S. Fader, *Capturing Evolving Visit Behavior in Clickstream Data*, 18 J. INTERACT. MKTG. 5, 5 (2004).

62. Seventy-one percent of teenagers between 13-17 years old use more than one social networking websites. ACT FOR YOUTH, *Youth Statistics: Internet & Social Media*, <http://actforyouth.net/adolescence/demographics/internet.cfm>.

63. See Edlin & Harris, *supra* note 22, at 180; See also Klemperer, *Competition*, *supra* note 25, at 517-18.

may be required to purchase a certain quantity of goods or refer a certain number of friends to a business. Customers who fail to meet these contractual terms may lose their membership benefits in the loyalty program. In practice, loyalty programs are common in the food and beverage, cosmetics, and supplement and vitamins industries.<sup>64</sup>

Similarly, businesses can strengthen relationships with consumers by including punitive clauses in contracts. For example, banks grant additional bonuses to customers on the condition that those customers deposit particular sums of money for a specified period of time. Failing to meet these conditions leads to the loss of that additional bonus. In some situations, consumers may even have to pay money back to the bank.<sup>65</sup> Similar systems are in place in the fitness, rental, and telecommunications industries.

So far, it is not clear whether contractual costs exist on Facebook. When users agree to Facebook's terms and conditions, they form a contractual relationship with the company. Users have the right to enjoy Facebook's services and in turn agree to Facebook's collection and use of their data for Facebook's business purposes.<sup>66</sup> Different from loyalty programs and punitive clauses, these terms neither render contractual rewards nor create obligations for users. It appears that users can leave, suspend, and stay on Facebook as long as they wish.

## 6. Uncertainty Costs

Uncertainty costs may arise for consumers in the context of experience products. Experience products are products that can be evaluated only after their purchase or consumption.<sup>67</sup> Characteristics of these products are generally hard to identify in advance. Products in this category include legal and banking services. Additionally, the value of these products typically depends on individual consumers' preferences. For example, people assess the quality of meals and haircuts differently. In these cases, switching costs emerge because "the experience a customer has had with the current supplier" clashes with "the lack of experience with alternative suppliers."<sup>68</sup>

Online networking platforms can be categorized as experience

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64. Brad Davis, *10 Industries Where Loyalty Programs are Extremely Effective*, STAMP ME (Dec. 9, 2019), <https://stampme.com/10-industries-where-loyalty-programs-are-extremely-effective/>.

65. For example, many airline companies reward loyal clients with points calculated by mileage. The points can be exchanged for free flight tickets. Points can also expire if not used within a specific period of time. See Yak, *Miles and Points Programs Expiration Rules – What You Need to Know*, POINTS YAK (Jan. 21, 2016), <https://pointsyak.com/credit-cards/miles-and-points-expiration-rules/>.

66. *Terms of Service*, FACEBOOK (Oct. 20, 2020), <https://www.facebook.com/terms.php>.

67. See Patterson, *supra* note 14, at 11.

68. Edlin & Harris, *supra* note 22, at 182. See also Klemperer, *Competition*, *supra* note 25, at 517.

products and are more likely to create uncertainty costs for two main reasons. First, the value of online networking platforms depends heavily on network effects.<sup>69</sup> Therefore, the value experienced by users after switching to other online networking platforms depends on platforms' user bases, and predicting how platforms' user bases will develop has never been an easy task. Second, existing online networking platforms, including Facebook, modify their services dramatically to respond to fast-changing market conditions. This business practice expands the gaps between consumers' expected utility and the real utility of the product.

Uncertainty costs also arise when an established market player is challenged by a new market entrant. For example, Facebook was a "first-mover" in the realm of online networking platforms and thereby enjoyed reputational benefits. Research shows that early-movers naturally obtain benefits from their reputation.<sup>70</sup> A first impression plays a critical role in forming consumers' preferences. Because the first-mover receives greater attention from consumers,<sup>71</sup> the first-mover will shape consumer expectations and understandings of the market. The reputational benefits create trust relationships with users, thereby strengthening users' confidence and satisfaction with the first-mover's products. Based on this analytical framework, users may have feelings of uncertainty leaving Facebook.

Because it is unclear whether switching costs lock-in users to Facebook's services, and this is a largely quantitative question, an empirical investigation is required to clarify the impact of switching costs on Facebook's users.

### III. EMPIRICAL STUDY

#### A. Research Design

To examine whether Facebook's users are locked into the platform, this Section tracks data on the number of users, time spent online, and advertising revenues of various online networking platforms following Facebook's significant privacy violations occurring in 2011 and 2019.

This study does not directly examine specific types of switching costs because consumers-specific data is not generally available. Instead, this study refers to two specific privacy violations to illustrate Facebook's

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69. Network effects happen when "adoption by different users is complimentary". Therefore, one's adoption increases other's incentives to adopt. See Edlin & Hoparris, *supra* note 22, at 178.

70. Marvin B. Lieberman & David B. Montgomery, *First-Mover Advantage*, 9 STRATEGIC MGMT. J. 41, 46 (1988) (citing Birger Wernerfelt, *Umbrella Branding as a Signal of New Product Quality: An Example of Signalling by Posting a Bond*, 19 RAND J. OF ECON. 458, 462 (1988)).

71. Lieberman & Montgomery, *supra* note 70, at 46.

relationship with its users following those violations.

### 1. 2011-2012 Privacy Breaches

In November 2011, the Federal Trade Commission (“FTC”) filed a complaint against Facebook, claiming that Facebook was breaking its privacy protection promises.<sup>72</sup> In August 2012, the FTC settled with Facebook on the condition that “Facebook must obtain consumers’ consent before sharing their information beyond established privacy settings” and take necessary measures to protect Facebook users. Based on these terms, Facebook signed the consent order.<sup>73</sup> The FTC’s complaints and the settlement were widely covered by the media and inspired impassioned public discussions.<sup>74</sup>

### 2. Violations of the 2012 Consent Order and Fines

In 2019, the FTC launched another investigation into Facebook’s conduct. According to the complaint, Cambridge Analytica “had improperly obtained the private information of more than 50 million Facebook users” sometime in March 2018.<sup>75</sup> The investigation examined whether Facebook breached the 2012 consent order. Ultimately, the Department of Justice, on behalf of the FTC, concluded that:

Facebook repeatedly used deceptive disclosure and settings to undermine users’ privacy preferences in violation of its 2012 FTC order.

72. See *Compare Facebook Settles FTC Charges That It Deceived Consumers By Failing To Keep Privacy Promises*, F.T.C. (Nov. 29, 2011), <https://www.ftc.gov/news-events/press-releases/2011/11/facebook-settles-ftc-charges-it-deceived-consumers-failing-keep>, with *The FTC’s settlement with Facebook: Where Facebook went wrong*, F.T.C. (Nov. 29, 2011), <https://www.ftc.gov/news-events/blogs/business-blog/2011/11/ftcs-settlement-facebook-where-facebook-went-wrong>.

73. See *Facebook Must Obtain Consumers’ Consent Before Sharing Their Information Beyond Established Privacy Settings*, F.T.C. (Aug. 10, 2012), <https://www.ftc.gov/news-events/press-releases/2012/08/ftc-approves-final-settlement-facebook>.

74. See e.g., Somini Sengupta, *F.T.C Settles Privacy Issue at Facebook*, N. Y. TIMES (Nov. 29, 2011), <https://www.nytimes.com/2011/11/30/technology/facebook-agrees-to-ftc-settlement-on-privacy.html>; Julianne Pepitone, *Facebook Settles FTC Charges Over 2009 Privacy Breaches*, CNN MONEY (Nov. 29, 2011, 3:09PM), [https://money.cnn.com/2011/11/29/technology/facebook\\_settlement/index.htm](https://money.cnn.com/2011/11/29/technology/facebook_settlement/index.htm); Frederic Lardinois, *Facebook And FTC Settle Privacy Charges — No Fine, But 20 Years Of Privacy Audits* TECH CRUNCH (Aug. 10, 2012, 1:21PM), <https://techcrunch.com/2012/08/10/facebook-ftc-settlement-12/>; Diane Bartz & Alexei Oreskovic, *Facebook Settles Privacy Case with FTC* REUTERS (Nov. 29, 2011, 1:39PM), <https://www.reuters.com/article/us-facebook-privacy-idUSTRE7AS21J20111129>; Terrence O’Brien, *FTC and Facebook Settle Privacy Dispute, Skip the Fine* ENGADGET (Aug. 10, 2012), <https://www.engadget.com/2012-08-10-ftc-and-facebook-settle-privacy-dispute-skip-the-fine.html>.

75. See Julia Carrie Wong, *Facebook to be Fined \$5bn for Cambridge Analytica Privacy Violations — Reports* GUARDIAN (Jul. 12, 2019, 6:12PM), <https://www.theguardian.com/technology/2019/jul/12/facebook-fine-ftc-privacy-violations>.

These tactics allowed the company to share users' personal information with third-party apps that were downloaded by the user's Facebook 'friends.'... [M]any users were unaware that Facebook was sharing such information, and therefore did not take the steps needed to opt-out of sharing. In addition, ... Facebook took inadequate steps to deal with apps that it knew were violating its platform policies.<sup>76</sup>

Upon completion of the investigation, the FTC imposed a \$5 billion penalty on Facebook, the highest penalty in Commission history. In addition to paying the record-setting fine, Facebook had to meet "significant requirements to boost accountability and transparency."<sup>77</sup> The investigation and subsequent fine were widely covered by all major news outlets and social media platforms in 2018<sup>78</sup> and 2019.<sup>79</sup> Therefore, it is reasonable to infer that users in the U.S. were aware of Facebook's violations.

Modern economic theories have assumed that consumers change suppliers when their suppliers raise the prices or lower the quality of products. Further, literature has indicated that most digital service users' privacy concerns stem from e-commerce and online networking.<sup>80</sup> Applying the same framework to the online networking

76. *FTC Imposes \$5 Billion Penalty and Sweeping New Privacy Restrictions on Facebook*, F.T.C. (Jul. 24, 2019), <https://www.ftc.gov/news-events/press-releases/2019/07/ftc-imposes-5-billion-penalty-sweeping-new-privacy-restrictions>.

77. *Id.*

78. See Tony Romm & Craig Timberg, *FTC opens investigation into Facebook after Cambridge Analytica scrapes millions of users' personal information*, WASH. POST (March 20, 2018), <https://www.washingtonpost.com/news/the-switch/wp/2018/03/20/ftc-opens-investigation-into-facebook-after-cambridge-analytica-scrapes-millions-of-users-personal-information/>; Cecilia Kang et al., *Facebook Faces Broadened Federal Investigations Over Data and Privacy*, N. Y. TIMES (July 2, 2018), <https://www.nytimes.com/2018/07/02/technology/facebook-federal-investigations.html>; Kurt Wagner, *Facebook may be facing a "multibillion-dollar" fine from the FTC. Here's why.*, VOX (Feb. 14, 2019, 5:45PM), <https://www.vox.com/2019/1/23/18193314/facebook-ftc-fine-investigation-explained-privacy-agreement>; and Lauren Feiner, *Mark Zuckerberg's Call for Tougher Internet Regulation won't Save Facebook from these Investigations* CNBC (Mar. 31, 2019, 10:03AM), <https://www.cnbc.com/2019/03/31/facebook-federal-and-international-investigations-into-data-privacy.html>.

79. See e.g., Brian Fung, *Facebook will Pay an Unprecedented \$5 Billion Penalty over Privacy Breaches*, CNN BUSINESS (Jul. 25, 2019, 1:08PM), <https://www.cnn.com/2019/07/24/tech/facebook-ftc-settlement/index.html>; Salvador Rodriguez, *How Facebook Stumbled to the Edge of a Government Breakup*, CNBC (Nov. 9, 2019, 9:00AM), <https://www.cnbc.com/2019/11/09/facebooks-antitrust-investigations-a-timeline-of-events.html>; Mike Snider & Edward C. Baig, *Facebook Fined \$5 Billion by FTC, must Update and Adopt New Privacy, Security Measures*, USA TODAY (Jul. 24, 2019, 8:54AM), <https://www.usatoday.com/story/tech/news/2019/07/24/facebook-pay-record-5-billion-fine-u-s-privacy-violations/1812499001/>; and Cecilia Kang, *F.T.C. Approves Facebook Fine of About \$5 Billion*, N. Y. TIMES (July 12, 2019), <https://www.nytimes.com/2019/07/12/technology/facebook-ftc-fine.html> (search by article name).

80. See Eszter Hargittai & Alice Marwich, "What Can I Really Do?" Explaining the Privacy Paradox with Online Apathy, 10 INT. J. COMMUN. 3737, 3737, 3744-45 (2016); Spyros Kokolakis, *Privacy Attitudes and Privacy Behavior: A Review of Current Research on the Privacy Paradox Phenomenon*, 64 COMPUT. & SEC. 122, 122, 127-28 (2016).

market, it is expected that Facebook's users would have rejected the platform or used it less frequently in response to the above mentioned privacy violations. Additionally, it is expected that new users will be added at a slower rate. Under these conditions, one would expect to see a decline in Facebook's advertising revenues. Furthermore, it is reasonable to expect Facebook's users would seek out alternative online networking platforms. These platforms would have benefitted financially from the influx of new users and following increases in advertising revenues as a result of obtaining those users. As discussed below, the study tests these assumptions based on a review of the available data.

However, some limitations should be noted. First, the study assumes that consumers will switch to other suppliers when current suppliers raise prices or lower the quality of their products. But consumers may not be rational in the real world, meaning that consumers may switch for reasons other than the price and quality of goods and services. Second, because of insufficient information about Facebook's privacy violations during 2011-2012 and 2018-2019, this study only identifies two privacy violations that may have incentivized Facebook users to leave the company. The study acknowledges that apart from the two privacy violations, other events may have led Facebook users to switch platforms. The study's final limitation concerns data collection. Because of limited access to personal data, the study cannot collect all Facebook users' data. Instead, the study collects data from a reliable dataset—Statista, which has comprehensive data related to online social networking platforms in the United States.

### *B. Data Collection*

#### 1. Scope

This study focuses on the United States' online networking market. Thus, the study collects data on users and advertising revenues from the following companies: Facebook, Instagram, Twitter, Snapchat, Pinterest, Tumblr, and TikTok.

In antitrust analyses, courts generally consider two markets: the product and geographic market. When examining the product market, courts test the interchangeability of multiple products from the perspective of consumers.<sup>81</sup> Effectively, if consumers consider that Product A is substitutable with Product B, courts will conclude that Products A and B are in the same product market. As to the geographic

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81. See Hovenkamp, *supra* note 16, at 122.

market, courts generally consider transportation costs.<sup>82</sup> If transportation costs associated with purchasing Products A and B are not substantially different, courts will determine that the two products are in the same geographic market.

While all platforms identified above have slight differences, they are comparable because they allow users to communicate within the digital space. For example, Instagram's main service is online networking. The company is famous for its photo-sharing and video-sharing functions. Recently, Instagram added two new resources: IGTV and LIFE, allowing users to interact with friends more actively.<sup>83</sup> Although Instagram offers multiple tools to its users, analogous products may be found in other online networking platforms such as Pinterest and Snapchat.

Finally, the study focuses on data ranging from 2010 to 2020. Because the online networking market is rapidly evolving, modern networking platforms are quite different from their predecessors. Thus, older datasets may not provide accurate guidance to policymakers.

## 2. Sources

The study first investigates data collected from Google Trends. The database shows social media users' reaction to the alleged two privacy violations. The study then examines data collected by Statista. Statista highlights changes in data. For example, one can compare advertising revenues by year or according to different online networking platforms. The platform also checks and validates the data. More than 2,000 universities and academic institutions use Statista for research purposes.<sup>84</sup> Thus, it is a reputable source for statistical research.

### *C. Analysis and Findings*

In examining the users' reactions to Facebook's data breaches, the study focuses on four data sets: (1) Google search volume, (2) number of users, (3) amount of time spent online, and (4) advertising revenues.

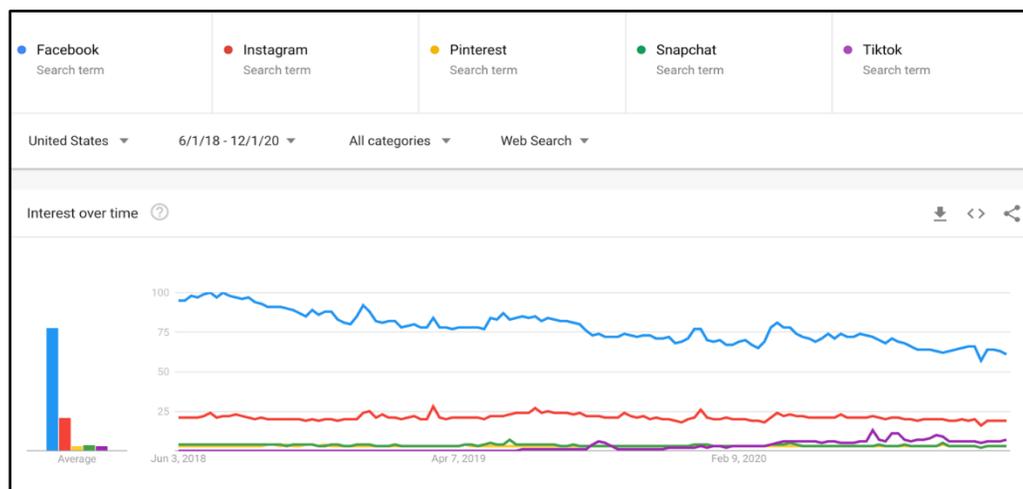
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82. *Id.*

83. *See Features*, INSTAGRAM, <https://about.instagram.com/features>.

84. *Trust is Earned When Actions Meet Words*, STATISTA <https://www.statista.com/aboutus/trust> (last visited Sept. 17, 2021).

## 1. Google Search Volume



[Figure 1]

The study used Google Trends to investigate the reactions to the 2019 privacy violation. Google Trends shows “how frequently a given search term is entered into Google’s search engine relative to the site’s total search volume over a given period of time.”<sup>85</sup> Facebook’s search volume may be used to highlight the public’s knowledge of their 2019 privacy violations. Additionally, one can infer whether users are considering switching to alternative platforms based on their Google searches.

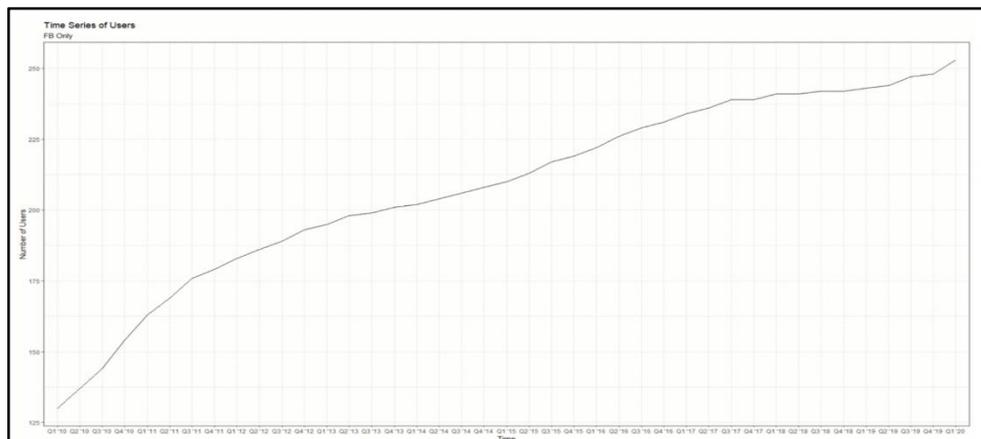
Figure 1 shows the Google search volume concerning the five major American networking platforms between June 1, 2018, and December 1, 2020. The following search terms were used: Facebook, Instagram, Pinterest, Snapchat, and TikTok.

The results show that Facebook’s search volume gradually decreased from June 2018 to December 2020. In comparison, the search volume of smaller platforms (Pinterest, Snapchat, and TikTok) rose gradually. Further, near the end of the search period, all five platforms’ search volumes were similar. Taken together, these observations suggest that Facebook users may have noticed the company’s privacy breaches in 2019 and expressed interest in other platforms.

To support this inference, this study considers Facebook’s user base, users’ time spent online, and advertising revenues.

85. *Google Trends: What Is Google Trends?*, WORDSTREAM, <https://www.wordstream.com/google-trends> (last visited Sept. 17, 2021).

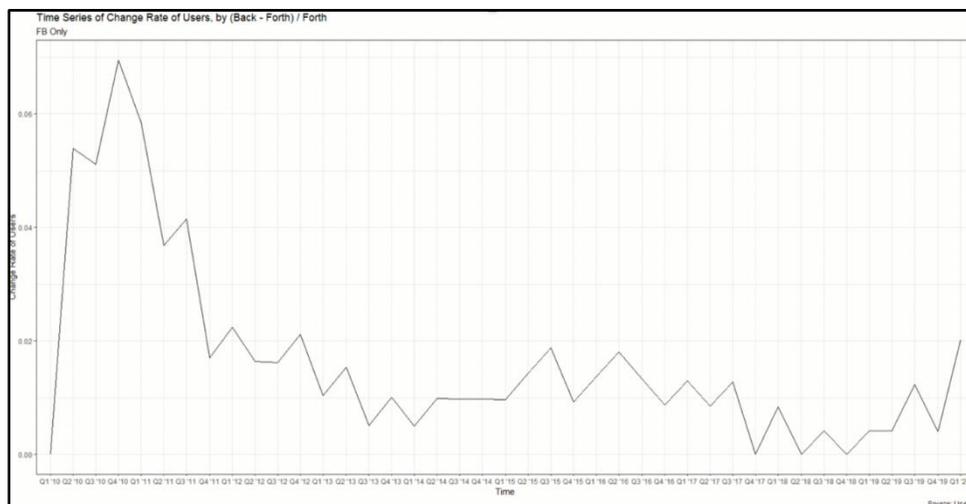
## 2. Number of Users



[Figure 2]

Figure 2 captures the number of users who relied on Facebook between 2010 and 2020. The data was drawn from Statista. It shows that Facebook has been steadily adding new users and the 2011 and 2019 privacy violations did not disturb this trend. It seems that Facebook users did not leave the platform following the violations, despite the fact that they were aware of the company's wrongdoings.

This observation does not conclusively show that Facebook has locked-in its users. Other explanations may account for the growth of the company's user base. For example, because the online networking market is still growing, it is possible that new users kept entering the market and ended up joining Facebook. Because of such uncertainties, a closer analysis is required. Therefore, the next data set looks at the rate by which Facebook's user base grew over time to determine whether the high-profile privacy violations had an impact on Facebook's growth.

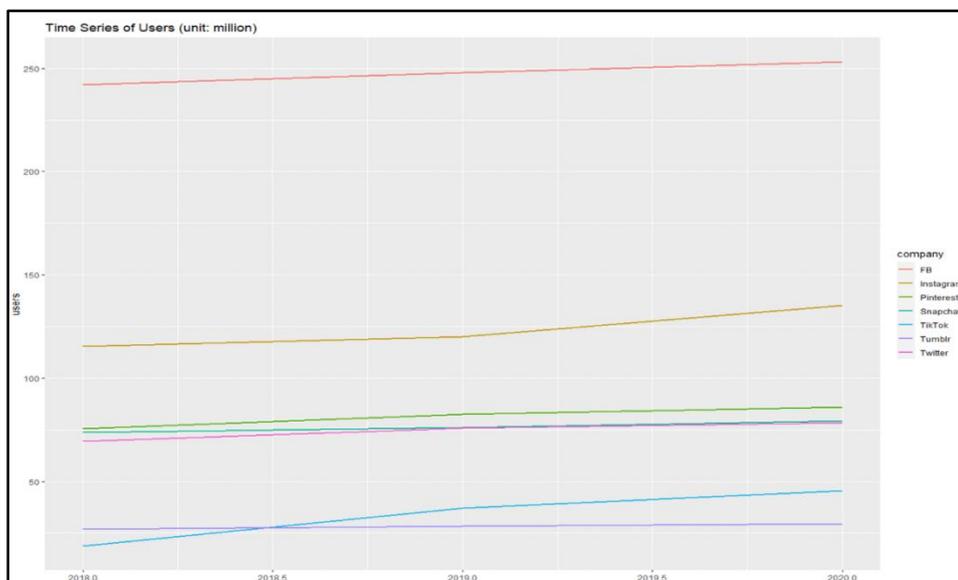


[Figure 3]

Figure 3 captures the rate at which Facebook's user base has changed over time. The graph demonstrates that Facebook's user base expanded by 5% in 2010. However, the growth rate slowed following the 2011 privacy investigations. Specifically, the growth rate decreased sharply during the last quarter of 2010 and the first quarter of 2011.

Moreover, Figure 2 also demonstrates that because of the release of the Department of Justice's 2011 report detailing Facebook's privacy violations, the company's 2011 growth rate did not match its growth rate in 2010. Significantly, following the release of the 2019 FTC report in July 2019, the growth rate once again slowed down.

Collectively, these observations are consistent with the assumption that users' willingness to join Facebook decreased following the aforementioned privacy violations. Alternatively, explanations for Facebook's decreasing growth rate during the last quarter of 2010 and the first quarter of 2011 are that the company had already captured most online networking users by early 2011, and/or the demand for online networking services had decreased more than before.

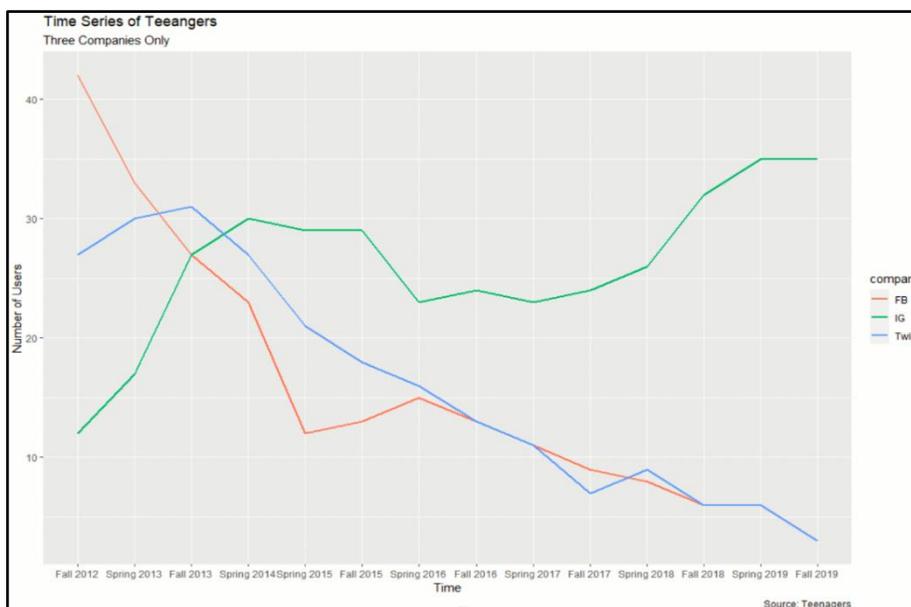


[Figure 4]

The growth of other online networking platforms during this same time period suggests that Facebook's privacy violations had a negative impact on the company's growth.

Figure 4 shows that in 2019 and 2020, Facebook had the lowest rate of growth, which stood at 2%. Comparatively, Twitter's user base grew by 3.5%. The growth rate of other platforms is notable as well: Instagram 12.5%, Pinterest 4.3%, Snaphchat 4.1%, TikTok 22%, Tumblr 3.8%. Therefore, Facebook's 2019 privacy violations may have had a negative impact on its ability to attract new users. The study shows that users may have become less willing to use Facebook. However, it is not certain whether the new users who joined Twitter, Instagram, Pinterest, Snaphchat, TikTok, and Tumblr are old Facebook users. Consequently, the study examines users' time spent online and Facebook's advertising revenues.

### 3. Length of Time Spent Online



[Figure 5]

Figure 5 considers the time teenagers spent online. Teenagers made up nearly 10% of Facebook users in 2019.<sup>86</sup> Therefore, teenagers' reactions to the two privacy violations may have affected the competition in the online networking market. Additionally, it is generally recognized that teenagers are more familiar with online networking platforms. Teenagers may have lower learning costs when switching platforms. Thus, they are less likely to be locked-in. For these reasons, the study tracks usage habits of users who are under 18 to determine whether teenage Facebook users switched platforms as a result of the two privacy violations.

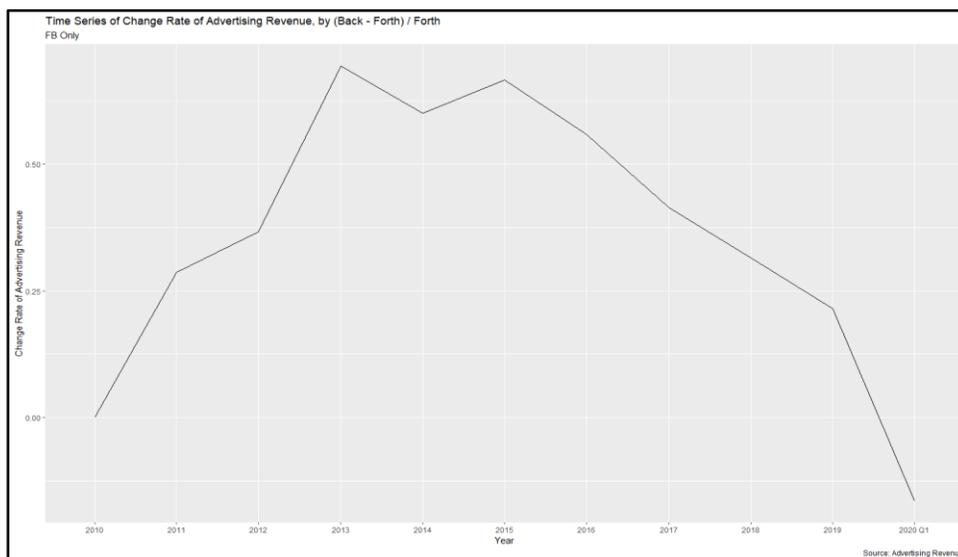
The study looks at three major online networking platforms: Facebook, Twitter, and Instagram. The data was drawn from Statista. The figure shows that Facebook had the largest online user base in the Fall of 2012 followed by Twitter and Instagram. After the 2011 privacy violations, Facebook's teenage user base continued to shrink. Conversely, Instagram's teenage user base grew from 2012 to 2019.

Figure 5 therefore supports that proposition that teenagers are flexible in their commitments to online networking platforms. Although Facebook is still the largest online networking platform, the company does not limit teenagers' choices regarding where to conduct social networking

86. See Pew Research Center, *Social Media Fact Sheet*, available at <https://www.pewresearch.org/internet/fact-sheet/social-media/>.

activities. Furthermore, the data suggest that teenagers abandoned Facebook in favor of other online networking platforms. Notably, in addition to privacy concerns, there are alternative explanations for teenagers moving away from Facebook. One such example: they may leave because their parents started to use Facebook, and they do not want their parents to see their online profile.

#### 4. Advertising Revenues



[Figure 6]

Changes in advertising revenues may detect the presence of lock-in effects. It is inferable that Facebook could demand that advertisers pay higher fees if it maintains a large and an expanding user base. Facebook can use these advertising revenues to develop more services to further grow its user base.<sup>87</sup> Ultimately, this circle led to Facebook's unprecedented business success. Notably, in 2020, Facebook earned over \$ 2.1 billion from advertising revenues.<sup>88</sup>

As illustrated above, a large user base is critical to Facebook's ability

87. See Rob Frieden, *Two-Sided Internet Markets and the Need to Assess Both Upstream and Downstream Impacts*, 68 AM. U. L. R. 713, 723-25 (2019). As Facebook does not charge non-business users for its social networking service, advertising fees from business users become the main source of revenue. The company uses the revenue to develop its platforms to attract more users, allowing it to charge business users with higher advertising fees to generate greater revenue.

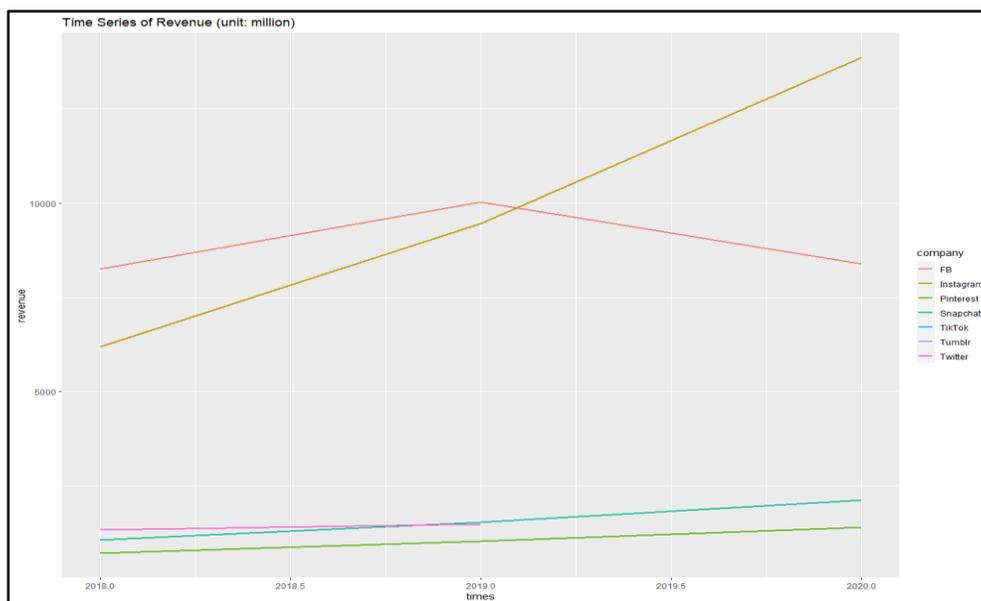
88. See *Facebook's Global Revenue as of 4th Quarter 2020, by Segment*, STATISTA (Jul. 29, 2021), <https://www.statista.com/statistics/277963/facebook-s-quarterly-global-revenue-by-segment/#:~:text=In%20the%20third%20quarter%20of,is%20generated%20via%20mobile%20devices.>

to attract advertisers. Lock-in users are undoubtedly one of the key ingredients to generate advertising revenues. Advertising revenues grow proportionally to the level of users on Facebook. More users and time spent online translate to Facebook's ability to charge higher advertising fees.

Figure 6 shows the growth rate for Facebook's advertising revenues. The data shows that the growth rate slowed following the 2011 and 2012 privacy breaches followed by a sharp increase between 2012 and 2013. Notably, the second sharp decline occurred during the 2019 privacy violations.

This significant reduction in advertising revenues indicates that there were likely changes in the company's user base. Combined with the other findings on changes in Facebook's user base, the data indicates that the two privacy violations had a negative effect on Facebook's user base and, in turn, affected the company's advertising revenues. This conclusion is consistent with the findings captured in Figure 3 and Figure 4.

The alternative explanation for Facebook's reduced advertising revenues is that the company's unacceptable reputation for privacy violations led to businesses' unwillingness to advertise on the platform. Even so, this does not invalidate the study's findings. Rather, this explanation would reveal the presence of competing firms that are interchangeable with Facebook, demonstrating businesses' freedom to switch among platforms. The finding therefore supports the inference that Facebook could not lock-in business users.



[Figure 7]

Figure 7 compares Facebook's advertising revenues to the other platforms before and after the 2019 privacy violations. It indicates that after the 2019 privacy violations, Facebook's advertising revenues dropped from \$10 billion to \$8.4 billion (a 16% decrease). However, at the same time, Instagram's advertising revenues increased from \$9.45 billion to \$13.86 billion (a 146% increase), Snapchat's advertising revenues rose from \$1.53 billion to \$2.11 billion (a 138% increase), and Pinterest's advertising revenues increased from \$1 billion to \$1.39 billion (a 139% increase).

These findings suggest that market factors did not likely influence Facebook's diminished advertising revenues. Other online networking platforms in similar conditions experienced growth. This may also indicate that the 2019 privacy violations reduced Facebook users' willingness to stay on the platform. Facebook's loss of users affected its advertising revenues. Facebook's advertising revenues declined, while the revenues of its competitors grew based on new users and advertising. These findings suggest that users can freely switch between various online networking platforms.

#### IV. CONCLUSION

Switching costs can indicate Facebook's market power. Switching costs can be divided into six types: search costs, compatibility costs, transaction costs, learning costs, contractual costs, and uncertainty costs. Among them, compatibility, learning, and uncertainty costs are most likely to occur in the online networking market. These costs may discourage Facebook's users from switching to other networking platforms.

However, the findings of this Article suggest that Facebook may not have substantial market power in the online networking market. The Article analyzed the data concerning the number of users, time spent online, and advertising revenues of major online networking platforms before and after Facebook's privacy violations in 2011 and 2019.

This Article found that Facebook's search volume decreased gradually beginning in June 2018. Similarly, Facebook's users and advertising revenues decreased after the announcement of privacy violations. Conversely, Google search volume increased for other platforms. Furthermore, new users were added to these platforms, and this translated into additional advertising revenues. Taken together, these findings suggest that Facebook users are still free to switch among various online networking platforms. No substantial switching costs discourage users from abandoning the platform. As a result, under the switching costs

2021]

MARKET POWER AND SWITCHING COSTS

147

approach, although Facebook may still have market power, that power is neither significant nor limitless. Instead, Facebook users' abilities to freely switch among different platforms—and the data suggesting that they do—reduces the company's ability to exploit users. Further, these findings can be used to argue that Facebook would not have sufficient market power to constitute a violation of Section 2 of the Sherman Act.