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WHY SOME PLATFORM BUSINESSES FACE MANY FRIVOLOUS ANTITRUST COMPLAINTS AND WHAT TO DO ABOUT IT

*David S. Evans**

ABSTRACT:
In the last decade a number of internet-based multi-sided platforms have emerged that provide free services to, in some cases, millions of businesses. This article argues that under current norms in adversarial proceedings these platforms are likely to face large numbers of complaints in multiple jurisdictions, a substantial likelihood that at least one of these complaints will result in a false-positive decision against the platform, and material risk of a false-positive decision that results in catastrophic consequences. These effects result from a combination of business users of free services receiving a free litigation option they can pursue if they have any complaints; an adverse-selection problem that results from free services being particularly attractive to start-ups that do not have or want to invest capital in their businesses; and the sheer number of free-business users resulting in a high cumulative probability of at least one false-positive decision. After documenting these phenomena, this article argues that government policymakers, including competition authorities and courts, should adopt a heightened level of scrutiny concerning complaints from free business users. This heightened level of scrutiny is necessary to counteract the impact of excessive litigation on innovation by multi-sided platforms.

I. INTRODUCTION

Over the last several decades many multi-sided platforms have emerged that provide free services to large numbers of businesses worldwide. These include social networking, search-engines, and software platforms. Businesses that receive free services sometimes object when the platform takes actions that these businesses perceive reduce the value of the free services to them. In some cases they have pursued complaints to competition authorities, started private

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litigation, lobbied for government investigations, and advocated regulation of the platform. A common complaint by business users is that the platform has violated various competition laws of the various jurisdictions.[1]

This article argues that successful multi-sided platforms that provide free business services are subject to "excessive litigation"[2] that can result in false-positive decisions as a result of three mutually reinforcing phenomena.

The first phenomenon involves the litigation option. Businesses that use platform services obtain an option to sue that platform or to advocate policies that could impose significant costs on the platform.[3] As the platform becomes more successful there is an increasing chance that courts or competition authorities will find that the platform is a dominant firm or that legislators will find appealing arguments that the platform should be regulated or otherwise restrained.

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[1] The following cases involve allegations by business users of free multi-sided platform services that the platform violated the competition laws, often as well as other laws, of one or more jurisdictions. *See, e.g.*, Opinion by Beijing No. 1 Intermediate People's Court, Civil Case No. Yizhongminchuzi 845/2009 [Renren v. Baidu] (alleging Baidu reduced Renren's website search rankings in violation of the Chinese Anti Monopoly Laws); Case T201/04 R, Microsoft v. Comm'n, [2004] E.C.R. II-4463; *KinderStart.com, LLC v. Google, Inc.*, No. C 06-2057 JF (N.D. Ca. Mar. 16, 2007) (alleging Google reduced Kinderstart's website search rankings in violation of Section 2 of Sherman Act); Complaint, Sambreel Holdings LLC vs. Facebook, Inc., No. 12 CV 0668 W KSC (S.D. California, March 19, 2012) (alleging Facebook sought to reduce user and advertiser use of the Sambreel's Yontoo Platform in violation of U.S. and California competition laws). See also Jhon Ribeiro, Facebook *Faces Antitrust Suit From Advertisement-Sponsored Skins Developer*, PCWorld (Mar. 20, 2012), *available at* http://www.pcworld.com/businesscenter/article/252189/facebook_faces_antitrust_suit_from_advertisementsponsored_skins_developer.html; Aldridge v. Microsoft Corp., 995 F. Supp. 728 (S.D. Texas, 1998); Aldridge v. Microsoft Corp., 995 F. Supp. 728 (S.D. Texas, 1998); Jeff Bliss & Brian Womack, *FTC Begins Twitter Antitrust Inquiry*, Bloomberg (July 1, 2011), http://www.bloomberg.com/news/2011-07-01/ftc-said-to-have-begun-antitrust-inquiry-into-twitter-s-developer-policies.html (concerning FTC investigation over Twitter's policies toward developers).

[2] Excessive litigation means more litigation than is socially optimal. A socially optimal legal system will result in "bad" complaints—ones that an all-knowing power would recognize are not valid—simply because the legal system has imperfect information and transactions costs. The problems identified here result in more bad complaints being brought. If the legal authorities fail to account for these effects, there will be more false positives (that is, wrong findings of guilt), which would discourage investment in free platform services and induce platforms to avoid improvements desired by users simply because it might harm some firms' business models.

[3] Buyers always have an option to sue for product liability, breach of contract, or other legal theories. The difference here is that buyers are obtaining that option for free.

The second phenomenon concerns large numbers. Several of these web-based multi-sided platforms attract millions of businesses. That is a consequence of their global reach, the types of services they are offering, and the attractiveness of free services. As the size of the affected population increases, a larger number of businesses are likely to believe they have been negatively affected by changes in platform policies concerning free services and pursue litigation or other adversarial proceedings.

The third phenomenon is adverse selection. Free-platform services are, all else equal, relatively more attractive to entrepreneurs that cannot secure funding. Investors are more likely to fund entrepreneurs that have better prospects of success. As a result of adverse selection, the businesses that rely on free platform services are more likely to encounter business problems. Some of these businesses may seek to obtain compensation or beneficial changes in the platform's terms by pursuing a government intervention—for example, by filing an antitrust complaint or threatening to do so.

These three phenomena compound each other. Applied to a very large population of businesses the use of the litigation option, combined with the adverse-selection problem, can result, on average, in many opportunistic complaints that consume management time, result in a significant likelihood of one or more false-positive decision against that platform, and pose a material risk of a catastrophic decision.

Multi-sided platforms may engage in anticompetitive practices or unfair business practices behavior just like any firm. Competition authorities, for example, should therefore maintain vigilance over these firms given their economic significance. The litigation option, adverse selection, and large number phenomena suggest, however, that public authorities should be more skeptical of businesses whose complaints stem from using free services provided by multi-sided platforms. This article proposes a heightened standard of review for these complaints in order to better balance false positives and false negatives.

II. MULTI-SIDED PLATFORMS AND FREE SERVICES

A multi-sided platform provides a place for people and businesses to find each other, engage in interactions, and exchange value.[4] They generate value by reducing transactions costs between

[4] *See* David S. Evans & Richard Schmalensee, *The Industrial Organization of Markets with Two-Sided Platforms, in* 1 Issues in Competition Law and Policy 151 (W. Dale Collins ed., 2008); Glen E. Weyl, *A Price Theory of Multi-Sided Platforms*, 100(4) Am. Econ. Rev. 1642 (2010).

members of two or more groups that could benefit from getting together. They do that by reducing the costs of finding trading partners, increasing the quality of the matching between these partners, and lowering the costs of exchange.

Public authorities should be more skeptical of businesses whose complaints stem from using free services provided by multi-sided platforms.

Each distinct group served by a multi-sided platform is often called a platform "side." For instance, retailers and shoppers are the two "sides" of the shopping mall platform. Economists have shown that theoretically the profit-maximizing price for one side can be below marginal cost, including at or below zero.[5] As a matter of fact, for many multi-sided platforms the price on at least one side is at or below marginal costs.[6]

Businesses often comprise at least one side of multi-sided platforms. In some cases multi-sided platforms do not charge these businesses much for obtaining access to the platform, using services provided by the platform, or interacting with users on the other sides of the platform. They get everything for free or below cost.

Software platforms commonly offer free services to business users.[7] A software platform acts as an intermediary between developers of applications and users of those applications. The platform makes code available to application developers through "application programming interfaces" ("APIs") and provides them with "software development kits" ("SDKs"). These APIs and SDKs help developers write applications that work on the platforms and are provided to people that want to use applications on the platform. The availability of these applications makes the platform more valuable to users. Computer operating system providers such as Apple and Microsoft provided free or low cost access to APIs and SDKs to stimulate the pro-

[5] *See, e.g.*, Jean-Charles Rochet & Jean Tirole, *Platform Competition in Two-Sided Markets*, 1(4) J. Eur. Econ. Ass'n 990 (2003); Mark Armstrong, *Competition in two-sided markets*, 37(3) RAND J. Econ. 668 (2006). Schmalensee has shown for two of the leading models of two-sided markets that these below-cost prices arise when the demand functions of the two sides are sufficiently different from each other. *See* Richard Schmalensee, *Why is Platform Pricing Generally Highly Skewed?*, 10(4) Rev. Network Econ. 1274 (2011).

[6] *See* David S. Evans, *Some Empirical Aspects of Multi-sided Platform Industries*, 2(3) Rev. Network Econ. 191, 193 (2003).

[7] *See* David S. Evans, Andrei Hagiu, & Richard Schmalensee, Invisible Engines: How Software Platforms Drive Innovation and Transform Industries (2006).

duction of applications for their platforms.

Many internet-based platforms have also created APIs and SDKs to help developers create applications for their users. Typically, the software platform that helps developers reach users is just one part of their business; that is, they have appended a software platform to add a developer side to another multi-sided platform. Social networks such as Facebook and LinkedIn, for example, have developed software platforms that enable developers to access their social graphs.

Search engines typically provide free services to websites, including those operated by businesses. They identify these websites, include them in the search engine database, index them using sophisticated algorithms, and enable users to find content from these websites (and links to them) in response to search requests. They typically provide websites with code and directions for helping the search engine index the content on their sites.[8] The search engines typically do not charge websites anything for these services.

Businesses obtain value from all these free platform services. Application developers obtain code that reduces their cost of development. More importantly, they obtain access to customers. Websites obtain the ability to make themselves known to a global audience of searchers. In fact, businesses can earn significant profits as a result of receiving free platform services. Lotus 123, for example, was the leading spreadsheet software for personal computers from the early 1980s until the early 1990s. It relied on Microsoft's MS-DOS and Windows software platforms. Microsoft did not charge Lotus 123 for the ability to use its platforms. Lotus also developed other software applications for personal computers that relied on free access to the software platform. Lotus was sold to IBM for $3.54 billion in 1995.

Modern multi-sided platforms have attracted very large numbers of businesses to their free services. Table 1 provides a summary for selected platforms. It reports approximate numbers when they are available and rough orders of magnitude when they are not. In many cases there is data on the number of applications; some businesses may write multiple applications. While the figures in the table do not provide a precise count of businesses that use free services of multi-sided platforms, they show the likely range goes from the hundreds to thousands to the many millions.

[8] *See, e.g.*, Bing Webmaster Tools, http://www.bing.com/toolbox/webmaster (last visited Feb. 23, 2012).

Table 1: Free Business Users of Multi-Sided Platforms

PLATFORM	NUMBER OF BUSINESSES APPLICATIONS	EXAMPLE
Microsoft Windows	4 million[9]	TurboTax
Facebook Software Platform	More than 550 thousand active applications[10]	Zynga's Farmville
Facebook Fan Pages	37 million with 10 or more likes[11]	Lady Gaga
Search Engines (Baidu, Bing, Google, and Yahoo)	Tens of millions[12]	PYMNTS.com
Google Android	450,000[13]	Out of Milk
Apple iOS	500,000[14]	Angry Birds
PayPalX	1000s[15]	Rentalics
Twitter Broadcasts	1000s	Discover Card
Twitter Software Platform	1 million[16]	Twitscoop

III. EXCESSIVE LITIGATION OVER FREE PLATFORM SERVICES

As shown earlier, multi-sided platforms can maximize private profits and social welfare by providing free platform services. However, by providing free services these platforms can sow the seeds of their own destruction through litigation or other governmental process. This section explains why.

[9] Ina Fried, *Live-blogging Steve Ballmer*, CNET (Jan. 6, 2010), http://www.cnet.com/830131045_1-10426723-269.html.

[10] http://en.wikipedia.org/wiki/Facebook_Platform. This figure was from 2010. Facebook does not currently report a separate number on active applications.

[11] *Id*.

[12] *February 2012 Web Server Survey*, Netcraft, http://news.netcraft.com/archives/2012/02/07/february-2012-web-server-survey.html (last visited Mar. 10, 2012).

[13] Andy Rubin, *Android@Mobile World Congress: It's all about the ecosystem*, Google (Feb. 27, 2012), http://googlemobile.blogspot.com/2012/02/androidmobile-world-congress-its-all.html.

[14] The iPhone App Store, http://www.apple.com/iphone/built-in-apps/app-store.html (last visited Mar. 8, 2012).

[15] Damon Hougland, PayPal X Developers Driving Innovation, PayPal Blog (May 25, 2010), https://www.thepaypalblog.com/2010/05/paypal-x-developers-driving-innovation.

[16] Jennifer Van Grove, *Twitter's Ecosystem Now Includes 1 Million Apps*, Mashable (July 11, 2011), http://mashable.com/2011/07/11/twitter-1-million-applications.

Modern multi-sided platforms have attracted very large numbers of businesses to their free services.

A. The Litigation Option

The "litigation option" refers to the ability to file a complaint, or more generally pursue an adversarial proceeding, against the platform in the event that certain events happen that could make a lawsuit or other use of government processes to seek redress viable. This option has positive expected value. The business does not have to file a lawsuit, for example, just as a person does not have to exercise a stock option. The business will file a lawsuit in the future if it has positive expected value at that time, just as the purchase of a stock option reflects the expectation that it has positive value. Since litigation is costly, the business will choose to incur these costs only if it expects the benefits of doing so to outweigh the costs. Moreover, the costs of lodging a complaint with a competition authority, for example, are relatively small.

Businesses, of course, always acquire an option to sue their suppliers, customers, or other business partners when they enter into an arrangement. Typically, these disputes result in breach of contract lawsuits for failure to pay or failure to perform. Generally, the business that sues successfully should be able to collect its actual losses (perhaps including attorneys' fees). These business disputes would usually occur in the civil courts unless there was criminal conduct—fraud for example—at issue. Government authorities would not ordinarily get involved in these contract disputes between businesses.

Businesses can pursue their complaints in a variety of venues and a number of ways and thereby impose costs and risks on their platform provider.[17] They can pursue complaints under a variety of legal theories. For example, in *Aldridge v. Microsoft* the application provider sued the platform for business disparagement, defamation, tortuous interference with contract, tortuous interference with business relations, monopolization, and attempted monopolization.[18] They can pursue complaints in multiple jurisdictions or the laws of multiple jurisdictions. A California-based company that has a merchant page on Facebook and that sells globally could, for example, file claims under California, U.S., and E.U. laws, as well as possibly the laws of many other jurisdictions.

[17] The cost and benefit of pursuing complaints varies across jurisdictions. In the United States, private litigation is costly and the odds of success for antitrust plaintiffs are long; however, treble damages can make the awards high especially for class-action lawsuits. In other jurisdictions, modest expenditures can result in a regulatory authority initiating an investigation. The complainant would not get damages directly but could get beneficial remedies.

[18] Aldridge v. Microsoft Corp., 995 F. Supp. 728 (S.D. Texas, 1998).

In addition to lawsuits, businesses can lobby for the passage of laws or regulations that restrict the platform on the grounds, for example, that it is an essential facility that should be subject to common carrier regulations. The prospect that platforms will be subject to what Judge Posner has described as "cluster bomb" attacks is increased by the fact that, given the global reach of the internet and the ability to replicate the digital delivery of products and services across many countries, both the platform and its business users are likely to operate in many jurisdictions.[19]

One of most common complaints by business users of free platforms is that the platform has engaged in anticompetitive practices. To help explore the scope of the litigation option it is useful to focus on this particular claim. To pursue this claim in many jurisdictions the business user has to argue that the platform has significant market power—a "dominant firm" under E.U. law or a "monopoly" under U.S. law—and that it has pursued practices that exclude competition from the market.

Under E.U. law a firm is presumed "dominant" if its market share exceeds 50 percent,[20] although some cases have considered firms to be dominant with shares as low as 40 percent.[21] In the United States, under Section 2 of the Sherman Act,[22] a firm is considered to have monopoly power if it has a predominant market share; some courts have held that 90 percent is enough to meet that standard, possibly 70 percent or more, but probably not as low as 60 percent.[23] Generally, competition authorities and courts have a great deal of latitude for defining markets narrowly for the purpose of determining these shares. Therefore, complainants have

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[19] Richard A. Posner, *Antitrust and the New Economy*, 68 Antitrust L.J. 925 (2001) 925.

[20] Case C62/86, AKZO Chemie BV v. Comm'n, 1991, 5 C.M.L.R. 215, at ¶ 60, *available at* http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:61986CJ0062:EN:PDF. The Court ruled that market shares in excess of 50 percent are "…in themselves, and save in exceptional circumstances, evidence of the existence of a dominant position."

[21] In *British Airways plc v. Commission*, British Airways was found dominant in the context of Article 82 with a share that had declined from 46.3 percent to just under 40 percent during the period of abuse. *See* Case T-219/99, British Airways plc v. Comm'n, 2003 E.C.R. II-5917, ¶¶ 211, 225 (Ct. First Instance), *available at* http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:61999A0219:EN:HTML. The finding relied heavily, though, on the fact that the rest of the market was very fragmented.

[22] Sherman Antitrust Act, 15 U.S.C. §2 (1890)

[23] For a summary of the case law, see Chapter 2: Monopoly Power, in U.S. Dep't of Justice, Competition and Monopoly: Single-Firm Conduct Under Section 2 of the Sherman Act, *available at* http://www.justice.gov/atr/public/reports/236681_chapter2.htm. Under Article 102 TFEU a dominant firm has "a special responsibility not to allow its conduct to impair competition on the common market. *See, e.g.*, Case 322/81, NV Nederlandsche Banden Industrie Michelin v. Comm'n, 1983 E.C.R. 3461, ¶ 57, *available at* http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:61981CJ0322:EN:HTML. *See also* Case T-201/04, Microsoft v. Comm'n, 2007 E.C.R. II-3601, ¶ 229 ("that undertaking has a special responsibility, irrespective of the causes of that position, not to allow its conduct to impair genuine undistorted competition on the common market . . . ."), *available at* http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62004A0201:EN:NOT.

the prospect of persuading the competition and courts that the platform is a dominant firm.

To pursue an antitrust complaint—under Section 2 of the Sherman Act or Article 102 TFEU, for example—business users generally have to be able to persuade competition authorities or courts that the platform is foreclosing competition. That would usually involve showing that the user and the platform are competing with each other in the same market, or that the platform is trying to extend its alleged dominant position in one market to a downstream market in which the user is competing. That imposes some limitation on the ability of free users of platform services to pursue an antitrust claim. However, the antitrust laws provide complainants with considerable flexibility in fashioning theories and interpretations of facts that can result in facially plausible claims. In particular, in the European Union and other jurisdictions, dominant firms have a "special responsibility not to … impair competition" and that language can be interpreted to condemn many business practices.[24]

Generally, complainants can argue that they compete with the platform in a primary market. Examples include:

- a software platform provider and an application provider that exposes APIs and therefore could provide platform features;
- a search engine provider and a website that curates content; or
- a social network and an application that in part provides connections between people.

Complainants can also argue that the platform is trying to leverage its platform dominance into a downstream market and thereby excluding competition from that market. Examples include:

- a software platform provider that includes a feature that could also be provided by an application;
- a search engine provider that provides various services as part of its search results; or
- a social network that provides services including applications.

[24] A*nswer given by Mr Almunia on behalf of the Commission*, eur. parl. (Mar 1. 2011), *available at* http://www.europarl.europa.eu/sides/getAllAnswers.do?reference=E-2011-000252&language=DE.

In some jurisdictions, business users of free platform services can argue that the platform is an essential facility to which they should have access on a fair, reasonable, and non-discriminatory ("FRAND") basis. The Supreme Court decision in *Trinko* sharply narrowed circumstances under which a court could conclude that a refusal to supply access was anticompetitive.[25] However, other jurisdictions, including the European Union and China, have an essential facilities doctrine under which it is possible for business users to claim that a denial of, or reduction in service or access, by a platform is anticompetitive, and to require access on a FRAND basis.[26]

The value of the litigation option to business users of free platform services arises in several different ways. As a result of a complaint a court or competition authority may require the platform to make changes in its business terms that would benefit the complainant. The complainant may also be able to obtain concessions from the platform, including monetary compensation, to withdraw a complaint or not to file it in the first place. In addition, the United States allows complainants to obtain treble damages.

The expected value of the litigation option varies depending on the circumstances of the entrepreneur and the platform and can evolve over time. The value of the option becomes higher over time as the platform becomes more successful. As the platform becomes more successful there is a higher likelihood that the courts and competition authorities will find that it is a dominant firm. The value of the option is also higher for firms that anticipate potential difficulties which would have a large effect on their profits and that they can blame on the platform. In fact, the option provides a valuable hedge against the risk of failure.

B. Large Numbers

Almost every significant business in the United States has a website. Most major brands in the United States also have a Facebook merchant page.[27] A recent survey found that more than 75 percent of independent restaurants and more than 95 percent of all chain restaurants

[25] *Verizon Communications Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398 (2004).

[26] *See* Christian Ahlborn & David S. Evans, *The Microsoft Judgment and its Implications for Competition Policy Toward Dominant Firms in Europe*, 75(3) Antitrust L.J. 887, 926 (2009); Freshfields Bruckhaus Deringer, *China Issues Guidance on Anti-Competitive Practices* 2, (Jan. 2011) http://www.freshfields.com/publications/pdfs/2011/jan11/29540.pdf,

[27] BrightEdge, *BrightEdge Says 61 Percent of World's Top Brands Create Google+Pages in Just One Week* (Nov. 16, 2011), *available at* http://www.brightedge.com/2011-11-16-BrightEdge-November-SocialShare (last visited Mar. 15, 2011).

The value of the litigation option becomes higher over time as the platform becomes more successful.

have Facebook merchant pages.[28] The number of business users of Facebook and Google just in the United States likely exceeds 5 million.[29] As Table 1 describes, other platform businesses that provide free services also have thousands, if not millions, of business users.

The large number of business users of multi-sided platform services, combined with the fact that these platforms could be defined as dominant firms, impose a high risk of antitrust scrutiny, and the possibility of a catastrophic result, on these platforms. Suppose, for example, that the probability of a business filing an antitrust complaint is .01 percent (i.e., 1 out of 10,000 businesses files a complaint). The expected number of complaints would be 1 with 10,000 business users, 10 with 100,000 business users, and 100 with 1 million business users.

A slight increase in the propensity to sue as a result of adverse selection can yield a significant increase in the number of complainants in the case of multi-sided platforms that offer free services. Suppose, for example, that the probability of a business exercising the litigation option increases by .001 percent (i.e., from 1/10,000 to 1/100,000). The expected increase in the number of complainants would be only 1 with 100,000 business customers, but would be 10 with 1,000,000 business customers and 100 with 10,000,000 business customers.

Table 2 reports estimates of the expected number of complaints per year for various assumptions concerning the number of businesses and the likelihood of any business filing a complaint. The number of complaints is significant with even very small probabilities of complaints.

[28] Restaurant Sciences LLC Online Presence Survey, March 2012.

[29] U.S. Census Bureau, *Statistics about Business Size (including Small Businesses)*, http://www.census.gov/econ/smallbus.html (last visited Mar. 23, 2012).

Table 2: The Number of Complaints by Free Platform Users

ANNUAL PROBABILITY OF COMPLAINT				
	0.0001%	0.001%	0.01%	0.1%
NUMBER OF BUSINESS USERS	**ANNUAL NUMBER OF COMPLAINTS**			
10,000	0	0	1	10
100,000	0	1	10	100
1,000,000	1	10	100	1,000
2,000,000	2	20	200	2,000
5,000,000	5	50	500	5,000
10,000,000	10	100	1,000	10,000

C. Adverse-Selection[30]

Businesses realize there are benefits and costs of relying on free services provided by a platform. Platforms tend to attract businesses that want free services either because investors have not been willing to fund the entrepreneurs adequately or because the entrepreneur themselves are not confident enough in their own prospects to invest themselves. Assuming these expectations are correct, and there is no apparent reason they would not be, these "liquidity-constrained" business are more likely to encounter business problems. As a result there is adverse selection into relying on free platform services. More vulnerable businesses are more likely on average to sort themselves into working with a platform that provides free services and into relying more on those free services.[31]

[30] The arguments in this section are developed more fully in David S. Evans, *Excessive Litigation by Business Users of Free Internet-Platform Services*, University of Chicago Institute for Law & Economics Olin Research Paper No. 603 (August 7, 2012). *Available at* SSRN: http://ssrn.com/abstract=2085029.

[31] This is the well-known "self selection" problem that has been studied by economists extensively on the context of labor markets. *See* A.D. Roy, *Some Thoughts on the Distribution of Earnings*, 3 Oxford Econ. Papers, 135 (1951) (presenting what is now considered the classic model of self-selection in labor markets).

The point is not that entrepreneurs that rely on free platform services are mainly poor or vulnerable entrepreneurs. Rather, the thesis is that platforms tend to pull more of these liquidity-constrained firms, which tend to have lower *a priori* odds of success, into their free programs.

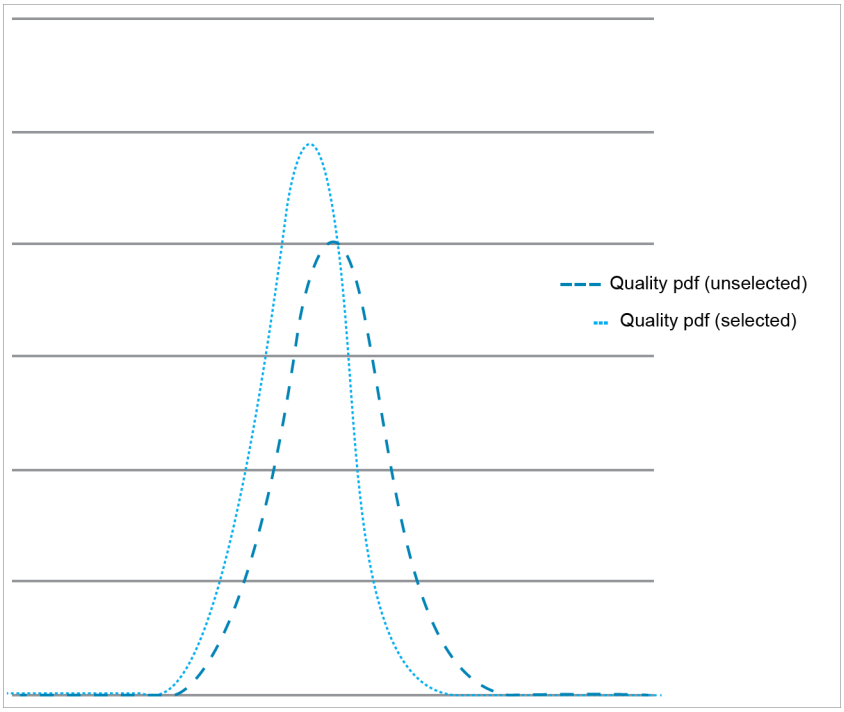
For illustrative purposes suppose, as shown in Figure 1, there is a metric of "quality" for entrepreneurs that stands-in for the likelihood that the business will be successful.[32] There are many high quality entrepreneurs that rely on free platform services and many low quality entrepreneurs that do not. The adverse selection problem results in the "average" entrepreneur that relies on free platform services having, however, a lower quality than the average entrepreneur in the population. It also results in the fraction of low quality entrepreneurs being higher for businesses that rely on free platform services than for the population overall.[33]

As a result of adverse selection, platforms that provide free services will tend to have a disproportionate number of businesses that do not do well. These businesses are more likely to complain for two reasons. They are more likely than successful businesses to be able to claim that they have been injured as a result of something the platform has done. The value of the litigation option is also higher for them.

[32] Of course, in reality, many factors influence the likelihood that a business will succeed. However, to illustrate the impact of adverse selection it is helpful to use a single hypothetical "quality" measure.

[33] The figure was generated using the following assumptions. Let Q be firm quality and E be everything else that affects the firm's choice of business model. Q and E are both distributed as independent standard normal variables. Let the firm choose a search reliant business model if $Q + E \leq 0$. The lines in the figure represent the density function (pdf) for the distribution of quality in the unselected population of firms and in the population of firms that self-select into search-reliant business models. Simpson's rule for numerical integration was used in the calculation of the selected density. As can be seen in the graph, the selected density assigns more probability mass to the lower quality regions.

Figure 1: Density Function for Selected Versus Unselected Firm Quality



IV. Search-Engine Based Platforms

To document the phenomena discussed above, it is useful to focus on search engines and the businesses that use free services for several reasons. First, there are a number of businesses that use free search engine services and they are economically significant. Many businesses have websites that rely to varying degrees on search engines to direct users to them. Businesses opened websites quickly after the start of the commercial internet in the mid-1990s. Most businesses have websites now. They rely on them to varying degrees from providing a simple listing to being the basis for the entire business. Two industries related to search engines have emerged. In 2010 U.S. eCommerce accounted for $165.4 billion of sales (4.2 percent of all sales)[34] and online advertising accounted for $26.04 billion of advertising spending (20 per-

[34] U.S. Department of Commerce, *U.S.Census Bureau News* Feb. 17, 2011 *available at* http://www2.census.gov/retail/releases/historical/ecomm/10q4.pdf, (last visited March 15, 2012).

Not surprisingly, given the large number of web-based businesses and the number of years they have been in existence, there have been many complaints to the courts and competition authorities.

cent of all advertising spending).[35] Search engines became widely used in the late 1990s and have become an integral part of eCommerce and online advertising businesses.

Second, it is relatively straightforward to measure, and obtain data on, the reliance of these web-based businesses on free platform services. Web traffic can come from viewers finding the site through a **search engine**; going directly to the website, which means they must have some prior knowledge of the site; or being referred there by another site. Yelp, for example, is heavily reliant on search engines while Angie's List is not.

Third, not surprisingly, given the large number of web-based businesses and the number of years they have been in existence, there have been many complaints to the courts and competition authorities. Therefore, it is possible to examine these complaints and the associated businesses to assess the possible importance of adverse selection.

A. Search Engine Business Model

Search engines have three major customer groups:

1. Websites that want people to be able to find them and their content.
2. People that are looking for information and hope to find it on the web.
3. Advertisers that want to present advertisements to people.

The business model is straightforward despite the complexity of the technology. The search engine aggregates content across the web. It uses that content much like any advertising-supported media company would to attract viewers. It then sells access to those viewers to advertisers.

[35] Interactive Advertising Bureau, *IAB Internet Advertising Revenue Report 2010 Full Results, available at* http://www.iab.net/media/file/IAB_Full_year_2010_0413_Final.pdf (last visited March 23, 2012); *Kantar Media, Kantar Media Reports U.S. Advertising Expenditures Increased 6.5 Percent in 2010* (Mar. 17, 2011), *available at* http://kantarmediana.com/intelligence/press/us-advertising-expenditures-increased-65-percent-2010 (last visited Mar. 16, 2012).

Search engines have algorithms that predict the relevance of web pages to the search query that an individual has submitted. Google initially focused on the quality of the web page based on the number and quality of the web pages that linked to the web page using its PageRank measure. It has become far more sophisticated. As of the end of 2011, Google used 200 factors, including PageRank, to select web pages and rank them in response to a query.[36] The results are then presented in order of relevance with results extending to multiple web pages. The probability that a person will click on a result declines sharply with the order in the rankings with a very sharp decline after the results on the first page. Websites that value traffic want to appear on the first page and as high on the first page as possible.

As the search engine business has developed, search engine companies have provided ways for websites to make it easier for the search engines to find the necessary information for ranking the website and therefore to achieve greater visibility in searches. Websites can submit information to the search engine such as a sitemap that the search engine can use to make it easier to find information on the site. Search engines provide websites with tools they can use to make sure that the search engine can find relevant content. They also provide advice on how to design and manage websites to increase the likelihood that users will be able to find relevant content. Search engines do not charge for indexing websites, for the tools or advice they provide to websites to improve their rankings, or for presenting web pages to users.

Because a high ranking generates more clicks, websites often invest in "search engine optimization" ("SEO") to improve their rankings. (These investments are typically not specific to the search engine.) That results in a major source of tension between the search engines and websites. The websites are interested as a business matter in making sales, attracting customers, or obtaining users for selling advertising. Websites all want to obtain high rankings but, of course, a higher rank for one is a lower rank for another. They therefore have incentives to trick the search engines into thinking that they are more relevant than they really are.

The search engines are interested as a business matter in attracting users. They do that in large part by presenting relevant results to those users. Successful efforts by websites to trick the search engine into thinking a site is more relevant than it is imposes costs on users, and ultimately lowers the reputation of the search engine as a reliable source of information.

[36] Google Webmaster Tools, *Google Basics: Serving results*, http://support.google.com/webmasters/bin/answer.py?hl=en&answer=70897(last visited Feb. 28, 2012).

B. Search Engine Reliance

Websites obtain traffic in several ways. Direct traffic occurs when a user types in the url for the website into her browser or uses a bookmark that directs the browser to go to that website. Search traffic occurs when an individual uses a search engine to conduct a search and as a result clicks on a link that takes him to that website. Referral traffic results when a user clicks on a link from a website that is not a search engine.

When a new website is launched, people who are not affiliated with the website would have no way to know that it exists except by coming across it inadvertently. A website can do various things to become known. Like any business it can engage in marketing activities, including advertising, to let people know that it exists. These activities drive direct traffic. It can also persuade other sites to link to it. Sites refer users to another site because they are providing a service to their users who would benefit from knowing about the other site. Sites also engage in swaps: you refer my site and I will refer yours. Websites can undertake search engine optimization to increase the likelihood that their sites will appear in search results.

The share of traffic that comes from search results provides a proxy for search-engine reliance.[37] Sites that are getting the preponderance of their traffic from direct and referral sources have made investments to establish their brands. Sites that are getting the preponderance of their traffic from search have primarily invested in tactics to increase their search rankings.

Data from compete.com show the distribution of the search shares. The analysis reported here is based on the 15,000 largest websites ranked by traffic and a stratified random sample of 15,000 of the next 1 million most heavily visited websites. The figures have been weighted

[37] It is not a perfect proxy because some people use search toolbars to type in the name of a URL. These navigational searches are similar to typing in the name of the site in the browser. Navigational searches, however, are likely to be positively correlated with direct referrals since they both result from people remembering the name of the site to enter. For example, in the case of Yelp, direct referrals are 5.83 percent of all visits, and navigational searches are 10 percent of all search referrals; in the case of Angie's List direct referrals are 14.74 percent of all visits, and navigational searches are 72 percent of all search referrals. Thus, Angie's List has both a higher share of direct referrals, and a higher share of navigational searches. Compete.com PRO Database, February 2012.

to reflect the sampling and therefore reflect the distribution of the largest 1 million websites.[38]

Table 3 reports summary statistics on these websites. We report total search, which includes some paid search resulting from advertising, because it is most comparable to other data we will report below on the Google complainants. The mean share of non-paid search traffic was 22.7 percent. Two-thirds of the websites (17th percentile through the 83rd percentile) have search shares between 10.4 and 40.9 percent.

Table 3: Distribution of Search Shares

PERCENTILE	NON-PAID SEARCH	TOTAL SEARCH
10th	5.41%	6.91%
20th	9.99%	11.52%
30th	13.64%	16.27%
40th	18.80%	21.13%
50th	22.65%	25.20%
60th	26.82%	28.67%
70th	31.17%	33.29%
80th	37.44%	38.90%
90th	44.80%	47.89%
Median	22.65%	25.20%
Average	25.06%	27.41%

C. Search-Engine Litigation

A number of websites have filed complaints against Google in the courts or before competition

[38] Formally, the sample consists of two strata—15,000 observations from the top 15,000 websites and 15,000 observations from next one million websites. From this sample of 30,000 websites, websites with missing data on the share of search traffic were excluded, leaving 11,892 websites. Even those websites with missing search traffic data included non-missing data on the total number of visits. This enables the estimation of the probability of missing search data using a logit model with data on all 30,000 websites. To appropriately weight the observations with non-missing search data, each observation should be weighted by the inverse of its probability of inclusion in the sample. This can be done, assuming that once the number of visits is controlled for the probability of missing data on search traffic is independent of the search traffic share. Under this assumption, if the fitted probability of non-missing data (from the estimated logit model) for observation i is p_i, then the weight for observation i will be $1/p_i$ if i was from the top 15,000 websites, and $(1/p_i)*(1{,}0000{,}000/15{,}000)$ otherwise.

A number of websites have filed complaints against Google in the courts or before competition authorities alleging that the Google search engine reduced their search rankings or ad placements and engaged in anticompetitive conduct in doing so.

authorities alleging that the Google search engine reduced their search rankings or ad placements and engaged in anticompetitive conduct in doing so. This article focuses on the extent to which these complaints come from businesses that have relied heavily on search engines and the implications of this reliance. It does not address, and takes no position on, the merits of these complaints.

One of the first businesses to sue Google was KinderStart. The complaint, filed in federal court in the United States by this "source of parenting and fun learning information,"[39] is typical of many of the others. Started in May 2000, KinderStart's business model involved attracting viewers to its site and selling advertising to entities that wanted to reach those viewers. To get viewers, it relied on search engines such as Google to list it in response to inquiries by consumers for parental advice. KinderStart claims it had "[s]teady, organic growth in visits and page views."[40] By early 2005, it had more than 10 million page views, a common measure that is used in selling web-based advertising.[41]

According to KinderStart, Google effectively blocked its site starting in March 2005. As a result, KinderStart claimed that its traffic dropped by 70 percent, and its advertising revenue declined by 80 percent. To generate traffic, it had used Google's AdSense program, which paid affiliated websites a share of revenue generated from ads that Google placed on the websites.

A year later, KinderStart sued Google on a number of grounds including violating KinderStart's right to free speech and for engaging in anticompetitive and unfair business practices. KinderStart sought certification of a nationwide class of similarly affected businesses whose websites had been blocked or penalized by Google. This article focuses on the claims

[39] KinderStart – About Us, http://www.KinderStart.com/footerlinks.jsp?articleID=96 (last visited Feb. 13, 2012).

[40] *See* Second Amended Class Action Complaint at 7, *KinderStart.com, LLC v. Google, Inc.*, No. C 06-2057 JF (N.D. Cal. Mar. 16, 2007).

[41] *See* Second Amended Class Action Complaint at 7, *KinderStart.com, LLC v. Google, Inc.*, No. C 06-2057 JF (N.D. Cal. Mar. 16, 2007). The complaint does not provide a date for the peak but it is presumably before the decline in traffic starting in March 2005, which is the subject of the complaint.

that Google had violated Section 2 of the Sherman Act.[42]

KinderStart made several notable observations in its complaint that foreshadowed future allegations against Google:

First, KinderStart claimed that search engines constituted a relevant antitrust market and that Google had monopoly power in this market as evidenced by having a share of more than 50 percent of that market.[43]

Second, KinderStart claimed that its website "is a directory and search engine that offers vital links to information and sites on key subjects affecting young children, including child rearing, child care, child development, food and nutrition, and education . . . ."[44] It claimed that it competed with Google in the search market.[45]

Third, KinderStart characterized Google as "a common carrier that makes a public offer to provide communications facilities for subscribers to freely use its facilities to link to and connect with one or more Websites that are hosted on the Internet."[46] It also asserted that any "[w]ebsite seeking to gain visibility, site traffic and page views must rely upon Defendant Google's Google Engine as an **essential facility** for receiving search query hits."[47]

Fourth, KinderStart claimed that Google attained and maintained monopoly power in the search engine market by reducing the search rank or denying access to its search engine for listings of KinderStart and other websites that competed in the search engine market.[48]

As it turns out, the court dismissed KinderStart's complaints holding that KinderStart failed to plead a relevant antitrust market and failed to allege causal antitrust injury.[49] The case is relevant because it is prototypical of subsequent actions brought against Google and Baidu. When a website experiences a reduction in its rank on Google search results it has become

[42] The discussion below is based on KinderStart's original and amended complaints and the ruling by the court of Google's successful motion to dismiss. The discussion focuses mainly on the Sherman Section 2 claims regarding the search market. *See id*. at 50-53.

[43] *Id*. at 7, 50.

[44] Class Action Complaint at 4, *KinderStart.com, LLC v. Google, Inc*., No. C 06-2057 JF (N.D. Cal. Mar. 16, 2007) (emphasis added).

[45] *Id*. at 10.

[46] First Amended Class Action Complaint at 10, *KinderStart.com, LLC v. Google, Inc*., No. C 06-2057 JF (N.D. Cal. Mar. 16, 2007).

[47] *Id*. at 12 (emphasis added).

[8] Second Amended Class Action Complaint at 51, *KinderStart.com, LLC v. Google, Inc*., No. C 06-2057 JF (N.D. Cal. Mar. 16, 2007).

[49] Order Granting Motion to Dismiss at 16, *KinderStart.com, LLC v. Google, Inc*., No. C 06-2057 JF (N.D. Cal. Mar. 16, 2007).

common for websites to file a complaint which claims that: (1) online "search" is a relevant antitrust market, (2) Google has monopoly power in that market, (3) Google's search engine is an essential facility, (4) the website also does search and therefore competes with Google in the search market, and (5) Google reduced the search rank of the website to maintain a monopoly or dominant position.

To study the relationship between litigation and search reliance, we have identified 21 major complaints that were filed against Google in the United States and European Union. The results are summarized in Table A in the appendix. The majority relate to organic search, which Google provides at no charge. In each case the table identifies the type of website, the main allegation, the venue of the case, and the website's traffic if it was still active. It also reports the percentage of traffic from search and the percentile in the search-reliance distribution for each complainant. A total of 21 complaints were identified. The number of complainants is minute relative to the number of businesses that obtain free website indexing and search from Google (there were about 662 million active websites worldwide as of May 2012). Of the 21 complainants it was not possible to obtain search data for three. Of the 18 complaints for which search data were available, six were in the top 10 percentile of the distribution of search reliance and 13 were in the top 40 percentile of the distribution. The complaints against Google therefore came disproportionately from firms that had extreme search reliance: 33 percent of the complaints for which there was data (6 out of 18) were in the top 10 percent of the distribution and 72 percent (13 out of 18) were in the top 40 percent. These results, however, are based on data after the complaints were filed in most of these cases. Since many of the complaints claim reductions in search rankings it is likely that the search shares were even higher before the complaint was filed.[50]

V. THE IMPACT ON SOCIAL WELFARE OF THE ADVERSE SELECTION AND LARGE NUMBERS PROBLEM

As noted earlier, multi-sided platforms are often economically significant firms. They have the same temptations as any powerful firm does to engage in harmful behavior. Competition

[50] Judging by their complaints, KinderStart and TradeComet were even more dependent on search than indicated here. KinderStart claimed that after Google reduced its search ranking, its page views plummeted to 30 percent of previous levels (Second Amended Complaint at ¶ 31), implying search dependence of greater than 70 percent. Similarly, TradeComet claimed that after Google raised the minimum AdWords bids required from TradeComet, traffic to its webpage dropped to 1 percent of its previous level (Complaint at ¶ 8), implying search dependence of 99 percent.

authorities, for example, should monitor these firms for all the same reasons they consider other significant companies. The adverse selection and large number problems, however, can generate numerous complaints from firms that have experienced problems largely because of their own failings but have chosen to exercise their litigation option opportunistically against the platform.

If courts and competition authorities had perfect information they could simply identify which complaints have merit and which do not. In practice, these decision makers do not have perfect information and therefore need to determine how much effort they should expend looking into these complaints. Even after investigation and adjudication they would not have perfect information and could, on occasion, condemn pro-competitive practices—what is known in error-cost analysis as a "false positive."[51]

This section argues that if competition authorities and courts ignore the adverse selection and large number problems, multi-sided platforms would be subject to excessive litigation and false positive decisions, which would reduce social welfare. The next section then describes how competition authorities and courts should adjust their decisions on allocating scarce resources—and ultimately their screens for assessing anticompetitive behavior—given these problems. In both cases, the analysis applies beyond competition authorities to any consideration of government policy towards multi-sided platforms based on complaints by users of free business services.

A. Adverse Selection, Large Numbers, and False Positives

Most antitrust cases arise from complaints by firms. In the United States, most antitrust litigation results from private lawsuits; firms bring most of these lawsuits with the exception of class action price-fixing cases involving consumer goods.[52] In most jurisdictions, competition authorities pursue cases as a result of complaints brought by firms. In the European Union the European Commission receives complaints and must make specific decisions on whether or

[51] This is also known as a Type II error. See Frank H. Easterbrook, The Limits of Antitrust, 63 Tex. L. Rev. 1 (1984); David S. Evans & A. Jorge Padilla, Designing Antitrust Rules for Assessing Unilateral Practices: A Neo-Chicago Approach, 72 U. Chi. L. Rev. 72, 73 (2005); Richard Posner, Economic Analysis of Law (8th ed. 2010).

[52] In the 12-month period ending March 31, 2011, private antitrust actions accounted for 537 out of the 555 antitrust cases filed in the federal courts (97 percent). Administrative Office of the U.S. Courts, Federal Judicial Caseload Statistics 2011, Table C-2, available at http://www.uscourts.gov/Viewer.aspx?doc=/uscourts/Statistics/FederalJudicialCaseloadStatistics/2011/tables/C02Mar11.pdf

If competition authorities and courts ignore the adverse selection and large number problems, multi-sided platforms would be subject to excessive litigation and false positive decisions, which would reduce social welfare.

not to pursue those complaints.[53] In the United States, although the Justice Department and the Federal Trade Commission do not have any obligation to pursue complaints, many of the monopolization cases they do pursue arise from complaints by businesses.

The previous sections have shown that several factors can result in competition authorities receiving large numbers of complaints concerning multi-sided platforms. Firms can fashion complaints that articulate a superficially plausible antitrust claim. Changes in platform rules can harm some of the business users of free platform services. A portion of those users may exercise their litigation option and file a complaint in court or before a competition authority. Although the likelihood that any particular user of free platform services files a complaint may be very low, because of the large numbers involved for some platforms, the cumulative likelihood that at least one complaint arises can be very high. In fact, as shown earlier, when a platform serves millions of businesses, a very small probability that a business will sue can result in hundreds of complaints and the virtual certainty of someone complaining.

These complaints are likely to come disproportionately from businesses that had relatively low *a priori* odds of success and, because of liquidity constraints, relied on free platform services relatively more than more successful companies. When a platform makes a change that harms some users the ones who use it the most are likely to be harmed the most. The businesses that are overly reliant on the platform are also likely to be more vulnerable businesses and therefore more likely to be pushed over the edge, into failure, as a result of the changes. The litigation option may be their only asset.

In the United States and other jurisdictions that allow private plaintiffs to recover treble damages businesses tend to have higher valued litigation options—all else equal—if they have been adversely affected by the platform change and rely heavily on the platform. In other jurisdictions these businesses may be able to secure concessions from the platform as a condition of not filing a complaint or withdrawing a complaint that has been filed.

[53] Council Commission Notice on the handling of complaints by the Commission under articles 81 and 82 of the EC treaty O.J. (C 101) 65-77.

The argument is not that cases brought against platforms necessarily lack merit. However, large multi-sided platforms that provide free services are likely to be subject to many complaints from firms that have failed as a result of their own low quality combined with decisions to rely mainly on the provision of free platform services. These firms are opportunistically using their litigation option to obtain compensation for problems they have, in effect, caused themselves. As noted, if courts and competition authorities had perfect information they could simply screen these cases out.

Information is imperfect, however, and it only takes one complaint to lead to a negative and possibly catastrophic outcome for the platform. Here is where the large number problem raises the stakes for multi-sided platforms. Suppose there is a 99 percent probability that the court or competition authority will reject a complaint that lacks merit and a 1 percent probability that it will rule in a complainants' favor, even though its complaint lacks merit. Consider a platform that has 1 million business users. The platform could expect to face 100 complaints if there were a .01 percent (i.e., 1/10,000) probability of a business user filing a complaint. Assuming the decisions on complaints are independent, one would expect that these 100 complaints would lead to one false positive.

While one could debate the specifics of this calculation, in both directions, the point is that as the number of business users increases, the probability of false positives increases. For platforms with millions of users each year, the probability of a false positive, over the duration of putative dominance, could approach certainty under plausible assumptions.

If antitrust lawsuits were simply about paying damages this result would not be of much concern. It would just be a cost of doing business for the platform. The problem is that a decision by a competition authority or court can apply to other business users of the platform in similar circumstances. That can result from either behavioral remedies[54] or a decision by the platform to change certain behavior to avoid costly litigation and damages in the future.[55]

B. False Positives and Negative Externalities

When a false positive arises, by assumption, the multi-sided platform has not engaged in an-

[54] For example, Microsoft was required to make certain information available to firms to facilitate their interoperating with Microsoft's Windows server operating system and to distribute a version of Windows that did not include certain media playing functionality. *See* Case T-201/04 R, Microsoft v. Comm'n, [2004] E.C.R. II-4463.

[55] *See* Claudine Beaumont, Microsoft and EU reach browser settlement, Telegraph (Dec. 16, 2009), *available at* http://www.telegraph.co.uk/technology/microsoft/6825561/Microsoft-and-EU-reach-browser-settlement.html.

ticompetitive behavior. In this case one can infer that the platform has adopted business practices, including decisions involving managing positive and negative externalities and balancing the sometimes competing interests of platform members, to maximize profits.[56] Economic theory finds that, although the balance struck by multi-sided platforms may not exactly equal the socially optimal balance, the direction and magnitude of the bias (if any) will depend in a complicated way on a host of hard-to-measure factors (such as marginal costs on all sides, demand elasticities on all sides, and the intensity of competition for end-users on all sides) and that there is no reason to believe that multi-sided platforms in general exhibit a substantial bias towards a particular side.[57]

Facebook, for example, has to balance the interests of the people who use its platform to send and receive communications, the merchants and other users that are interested in reaching these people, advertisers interested in reaching these users, and application developers. Almost any decision that Facebook makes concerning access to a user's News Feed can have an impact on the user, the user's friends, advertisers, merchants, and developers.

Platforms are likely to alter the balances they strike between different parts of the community when courts or competition authorities reach a false positive decision. In this case the court or competition authority would have reached a conclusion that a business practice involving one side of a multi-sided platform is unlawful. The platform would suspend the practice either as part of a behavioral remedy or to avoid future penalties.

Suppose, for example, Google were compelled to change its practices for ranking websites, or for punishing websites that violate its practices. Some websites would necessarily do better in the rankings but others would do worse and would therefore lose. In addition, to the extent

[56] *See generally* Rochet & Tirole, *supra* note 5; Weyl, *supra* note 4. For a platform with market power there are two possible sources of welfare loss. One is the usual welfare loss resulting from the exercise of market power, which results in the elevation of overall prices. The other is a possible welfare loss which results in tilting the price structure in such a way that one side is bearing more, and another side less, of the cost of operating the platform that a social welfare maximizing regulator would.

[57] Rochet & Tirole, *supra* note 5. Some authors have identified specific exceptions, such as with payment cards, where under some assumptions the profit-maximizing platform operator may tilt prices more towards one side more than a social welfare-maximizing platform operator would. See Özlem Bedre-Defolie & Emilio Calvano, Pricing Payment Cards (ESMT, Working Paper No. 10, 2010), at 5-6. Calvano observes, however, that even under these assumptions the privately and socially optimal prices are unlikely to differ dramatically. *See* Emilio Calvano, Note on the Economic Theory of Interchange, Comment on the Federal Reserve's Proposed Regulation II (2011), *available at* http://www.federalreserve.gov/SECRS/2011/March/20110328/R-1404/R-1404_030811_69122_621890579792_1.pdf.

that Google's ranking decisions were correct to begin with, consumers would get lower quality search results. If consumers reduced their use of search because of this reduction in quality then advertisers would have less ability to reach these consumers.[58]

False positive decisions cause negative externalities and thereby reduce social welfare. Platforms seek to maximize the value of the platform to the members after taking into account positive and negative externalities between these members. When one of these decisions is reversed it is likely that the platform will either create fewer positive externalities or more negative externalities. That could result directly from reversing rules that generate positive externalities among members by, for example, making it easier for them to get together and interact or that suppress negative externalities by, for example, discouraging members from disseminating bad information. That could also result indirectly from changing pricing decisions or rules that reduce platform participation by some members. For example, suppose the platform is required to increase prices to a group of platform participants. The platform would have chosen prices given the positive externalities between members to maximize the value of the platform. By raising prices to one group, the platform would reduce their participation, and by reversing positive feedback effects, would reduce the value of the platform to other groups.

C. The Impact of False Positives on Platform Decisions, Design, and Innovation

A false positive decision can have spillovers from the narrow matter that was under consideration for that decision. It can set a precedent that the platform must abide by in other related decisions. A decision concerning platform practices or rules concerning the use of free services by businesses can directly affect those practices or rules. A decision may enjoin a particular type of practice. A decision can also lead the platform to modify other practices or rules that seem like they would be subject to similar complaints and thus similar adverse decisions. A false positive decision can also set a precedent that raises the likelihood that similar practices and rules adopted by other platform companies will be subject to adverse decisions. Other platforms will therefore alter those practices and rules in anticipation of costly litigation and negative rulings.

The primary cost of false positive decisions arising from the adverse selection and large number problems, however, involves distortions in decisions that platforms, and their entrepreneurs, make prospectively concerning the adoption of business models, the direction of in-

[58] Gord Hotchkiss, *Why Results Quality is So Important to Search Engines*, Search Engine Land (May 20, 2011), http://searchengineland.com/why-results-quality-is-so-important-to-search-engines-77957; *In Search of the Perfect Search: Can Google Beat Attempts to Game the System?*, Knowledge@Wharton (Mar. 16, 2011), http://knowledge.wharton.upenn.edu/article.cfm?articleid=2731.

novation, and governance rules. The thesis of this article is that these problems result in a high probability, if not a certainty, that large, global multi-sided platforms will face false positive decisions concerning the business users of the platform. That expectation could lead platforms to increase the price to business users to compensate for the risks and incremental costs they will bear, to avoid innovations that could harm some business users, and to vertically integrate into applications rather than relying on an open platform. At the margin the likelihood of false positive decisions—i.e., adverse decisions over pro-competitive business practices—reduces the incentives to start platforms or to consider platform models that involve providing services for free to businesses.

Any reduction in the supply of free business services by multi-sided platforms could have knock-on effects on innovation. An open platform model in which entrepreneurs are encouraged to develop applications and other complementary products decentralizes innovation. This type of model moves the control of the direction and pace of innovation from the platform owner to a large population of entrepreneurs.[59] This fact is seen from the success that several of the global multi-sided platforms have had as shown in Table 1. It is hard to imagine a centralized firm accomplishing so much innovation in such as short space of time.

D. Impact on Competition Authority Resource Allocation

The large number and adverse selection problems could result in a further inefficiency. Uncorrected, these problems could lead antitrust authorities into misallocating their resources and investigating multi-sided platforms more than other industries that have the same or higher likelihoods of having engaged in wrongdoing. Given that competition authorities have scarce resources, the failure to adjust decisions to pursue cases given these phenomena would result in underinvestment in pursuing other complaints.

To see the essence of the problem consider a competition authority that has to evaluate whether to invest resources on the investigation of various companies. Company A is a global multi-sided platform that provides free business services and Companies B and C are not multi-sided platforms. All three firms have the same revenue and market value. The authority has 20 complaints against company A, only one against company B, and none against com-

[59] Joel West & Scott Gallagher, *Challenges of open innovation: the paradox of firm investment in open-source software*, 33 R&D Manage. 319, 320 (2006); Georg von Krogh et al., *Community, joining, and specialization in open source software innovation: a case study*, 32 Research Pol'y 236, 237 (2003).

pany C. All else equal the authority might conclude that the agency should focus on company A because of the volume of complaints. But company A could be subject to many complaints as a result of the large number and adverse selection problems. There is no a reason, *a priori*, to believe that company A is more likely to have engaged in anticompetitive behavior than companies B or C.

At the margin the likelihood of false positive decisions reduces the incentives to start platforms or provide services for free.

VI. HEIGHTENED ANTITRUST SCRUTINY OF COMPLAINTS BY BUSINESS USERS OF FREE MULTI-SIDED PLATFORM SERVICES

This article proposes that courts and competition authorities should impose a higher level of scrutiny on complaints brought by business users of free multi-sided platform services. Before describing what this means in practice it is helpful to emphasize that the proposal itself is modest. There is no suggestion that antitrust decision makers should ignore possible antitrust violations by multi-sided platforms, much less give them a free pass. Some of these platforms are economically significant and anticompetitive actions by them could impose serious harm. Nor does this article suggest that competition authorities or courts should presume that platform business practices concerning business users of free platform services are pro-competitive.

However, this article has shown that the litigation option, adverse selection, and large number phenomena are likely to lead to false positive decisions against multi-sided platform providers of free business services and that those false positives, and the anticipation of them, reduce social welfare. The reduction in social welfare could be significant since it could lead to an increase of negative externalities on large multi-sided platforms that are subject to an adverse decision and because it could have follow-on effects on innovation and decisions at other, including formative, multi-sided platforms.

A. How Decision Makers Should Adjust Their Assessments

The first part of the proposal is that courts and competition authorities should consider the litigation option, adverse selection, and large number phenomena in forming judgments con-

cerning the weight that a particular complaint by a business user of free plaintiff services should be given.[60] Courts and competition authorities ultimately need to make judgments on whether or not to pursue a complaint. In the United States, courts have to decide motions to dismiss a complaint and motions for summary judgment.[61] Competition authorities in all jurisdictions need to decide how to allocate resources across different industries. They must also choose which complaints to pursue and how aggressively. Whether they acknowledge it or not, these decisions are based in part on judgments concerning the weight to be accorded to various kinds of evidence and, ultimately, the likelihood that further consideration will uncover anticompetitive behavior.

Any particular complaint against a multi-sided platform that provides free services may result from a low-quality business that has failed largely through its own shortcomings, opportunistically exercising their litigation option. That probability increases with the number of businesses that use free platform services. Moreover, competition authorities and courts should discount multiple complaints, at a point in time or over time, against a multi-sided platform provider of free business services according to the number of business users served by a platform. It would be wrong to infer that multiple complaints necessarily suggest a pattern of anticompetitive behavior or signal a serious problem, given the very larger number of entities that interact with the platform.

B. Heightened Scrutiny of Complaints

The analysis set forth indicates that courts and competition authorities could reduce the likelihood of reaching a false positive decision by taking the following factors into account in assessing a complaint:

- The extent to which the harm alleged by the complainant is the result of business practices engaged in by the platform versus the failings of the complainant itself. For this purpose it is useful for the decision maker to examine the quality of the business including the entrepreneur, the management team, the business model, business execution, and financial backing.

[60] D.H. Kaye, *Burdens of Persuasion: What Bayesian Decision Rules Do and Do Not Do* 3 Int. J. Evid. Proof 1 (1999).

[61] Such motions are decided according to the tests set out in *Bell Atlantic Corp. v. Twombly*, 550 U.S. 544 (2007) and Ashcroft v. *Iqbal*, 556 U.S. 662 (2009).

- The number of business users of free platform services. With a large number there is a higher probability that the particular complaint is an aberration, due to the peculiarities of the business in question, and not evidence of anticompetitive behavior.
- The impact of enjoining the behavior on other platform users. That should consist of other business users as well as other sides of the business. A change in business practices that benefits particular types of business users, but harms other business users and other platform users, would likely decrease social welfare.
- Whether the decisions regarding the complainant follow a governance system for reducing negative externalities. In this case there is a strong presumption that the decision is pro-competitive and the burden should be placed on the complainant to show that it is not.[62]

These factors could be taken into consideration at any stage of the analysis. For competition authorities these factors would be taken into account at the point of deciding whether to devote resources to a complaint, whether to move a complaint into a full-fledged investigation, whether to pursue a complaint, what issues to focus on, and which behavioral remedies to advocate. For U.S. courts these factors would be considered during procedural phases (motion to dismiss and summary judgment) as well as during consideration of the merits of the case and remedies.

C. Application to Search Litigation

In the case of the Google search litigation this analysis indicates that the courts or competition authorities should take several factors into account in considering complaints.

1. **The relative number of complainants**. Google has provided free listing and search services to millions of business websites for more than a decade. The number of complainants relative to the population of businesses that have obtained similar free services from it is extremely low. It also appears that

[62] *See* David S. Evans, *Governing Bad Behavior by Users of Multi-Sided Platforms*, 27(2) Berkeley Tech. L. J. (Autumn, 2012).

Some of these businesses have pursued complaints against Google in part because they have received help from one of Google's competitors.

some of these businesses have pursued complaints against Google in part because they have received help from one of Google's competitors.[63] In effect, a platform competitor has in effect purchased the "litigation options" of these businesses to impose costs.

2. **Search dependency**. It appears that most of the companies that have filed complaints against Google (in contrast to other sites) are highly search dependent. About a third of the complainants had developed businesses that relied almost entirely on search for traffic to their websites. That is consistent with these businesses having decided that, given their abilities and their ideas, it was not worth investing in branding that would attract direct traffic.

3. **Adverse selection**. Many of the complaints concern reductions in search rankings. These have mainly come from web sites pursuing business models offered by many similar sites. These firms would not have had a high likelihood of success—since such "me-too" sites do not generally—regardless of changes in their search rankings. In addition to relying excessively on search, these businesses perhaps ran into difficulties for the same reason that other business do that fail to distinguish themselves.

4. **Alleged harm results from governance system**. Most of the complainants claim that they were harmed as a result of Google either reducing their search ranking as a punishment or as a result of Google changing its algorithms. Having a governance system that counters the incentives of websites to engage in self-serving manipulation of their rankings is economically efficient. As noted earlier, complainants should bear a heavy burden in challenging practices that result from the application of a platform governance system. In particular,

[63] *Microsoft Encourages Google Antitrust Complaints*, Utility Exchange (Mar. 1 2010),http://www.utility-exchange.co.uk/microsoft-encourages-google-antitrust-complaints-5445/.

a complaining party should be required to certify that the information provided to the agency is, to their knowledge, accurate. The agencies should also establish a mechanism for sanctioning third parties that mislead the agencies into imposing costs on other parties.[64]

By providing free services multi-sided platforms stimulate a great deal of effort by entrepreneurs. But they also tend to attract firms that cannot secure funding or that do not want to invest because of the risk.

5. **Negative externalities**. As a general matter it is economically efficient for search engine platforms to penalize websites that artificially inflate their rankings and to modify their algorithms to reduce the ability of websites to game the system. Moreover, it is impossible in the real world to design governance systems that have zero false positives—just as it is impossible to design a legal system to have zero false positives. Action by a court or competition authority that would discourage the use of these economically efficient methods would impose negative externalities on the other platform participants including websites (some of whom would have lower rankings in the absence of methods to deter opportunistic efforts to increase rankings) and search users (who will obtain less relevant search results).

This article does not argue that these factors by themselves should lead to the dismissal of complaints against Google or other search engines in similar situations. Rather, the point is that courts and competition authorities should consider these factors in their decision making.

VII. CONCLUSIONS

In the last two decades one of the most remarkable developments in the history of business has occurred. Multi-sided platforms, operating globally, have developed internet-based software that enables businesses to access hundreds of millions of consumers who also use these

[64] Although the agencies have tools to punish particularly egregious conduct, these additional measures would provide additional protections that both conserve agency resources and protect targets and third parties from opportunistic abuses. If a party is dissuaded from submitting a complaint because of the requirement to swear as to its veracity, the agencies likely are better off not having received it.

platforms for services. These platforms not only provide this access for free, in many cases, but also provide other assistance to help these businesses. Millions of businesses use free services provided by firms such as Facebook and Google. In some cases these multi-sided platforms provide extensive software assistance that enables entrepreneurs to develop businesses based on applications that work with these platforms. Hundreds of thousands of applications have been created by software platforms that run on personal computers, mobile devices, or in the cloud.

By providing free services multi-sided platforms stimulate a great deal of effort by entrepreneurs. But they also tend to attract firms that cannot secure funding or that do not want to invest because of the risk. Many of these entrepreneurs who rely on free platform services may be highly capable. But there are reasons to believe that platforms that provide free business services attract entrepreneurs that want to rely on free services because the entrepreneurs and potential investors do not have enough confidence to risk losing their capital investments. As a result, when the platform makes changes that adversely affect some business users, these low quality firms are the ones most likely to complain. In some cases, changes made by the platform push them into bankruptcy or would if they could not get a reprieve. The only asset they have left is a litigation option.

The fact that multi-sided platforms serve very large numbers of business users raises a further problem. These large numbers increase the likelihood that changes made by a platform will cause some business to file a lawsuit. It takes only a miniscule propensity to sue to generate a complaint—indeed many complaints—given the large numbers of businesses served. Furthermore, when applied to a very large number of businesses the adverse selection of entrepreneurs into reliance on free business services results in a significant number of complaints coming from relatively poor businesses that are exercising their litigation option.

Competition authorities and courts should take the litigation option, adverse selection, and large number phenomena into account in evaluating complaints. Otherwise global multi-sided platforms will be swamped with litigation in multiple jurisdictions around the world. Unless courts and competition authorities make adjustments in their decision making, these platforms are virtually guaranteed that they will be subject to a false positive decision at some point. These false positive decisions would result directly in the reduction in social welfare created by the targeted multi-sided platforms, which would have to rebalance business practices in ways that would necessarily harm some non-complaining users. They would also tend to

discourage multi-sided platforms from operating open platforms that provide free services to business users and discourage multi-sided platforms from engaging in legitimate balancing decisions.

APPENDIX TABLE

Examples of Antitrust Complaints Against Google's Search Engine [i]

Complainant	Service	Year	Allegation	Venue	Monthly Unique Visitors	Percent of Visits from Search	Search Percentile
Search King	Search	2002	Demotion of search ranking	US	1,447	33%	69th
KinderStart	Parenting resources	2006	Demotion of search ranking	US	807	52%	92nd*
Christopher Langdon	Blog	2006	Refusal to place ads	US	Defunct	-	-
Carl Person	Vertical search	2006	Manipulation of AdWords auctions; favoring other sites	US	2,165	65%	97th
Trade Comet	Business directory	2009	Manipulation of AdWords auctions; favoring other sites	US	2,701	72%	97th
myTriggers	Comparison shopping	2010	Manipulation of AdWords auctions	US	6,155	72%	97th
D'Agostino	eCommerce	2010	Mistaken identification as duplicate site, resulting in a reduction in search ranking	US	Defunct	-	-
Yelp	Local reviews	2010	Favoring Universal Search; excessive utilization of complainant's content	US	16,316,263	50%	91st
TripAdvisor	Travel	2010	Favoring Universal Search	US/EU	13,802,658	31%	65th
Expedia	Travel	2010	Favoring Universal Search	US/EU	33,706,382	13%	23rd
Kayak	Travel	2010	Favoring Universal Search	US	6,569,610	17%	31st
Nextag	Comparison shopping	2010	Favoring Universal Search	US	18,176,620	34%	71st
Ciao	Shopping portal	2010	AdSense exclusivity and other restrictions	EU	-	33-40%	69th – 82nd

Foundem	Comparison shopping	2010	Demotion of search ranking; Favoring Universal Search	EU	-	46%	88th
1PlusV	Vertical search	2010	Removal of webpages from Google's index; Demotion of search ranking	EU	-	56-73%	94th – 98th
Deal Du Jour	Deals	2011	Demotion of search ranking	EU	-	27%	53rd
HotMaps	Online maps	2011	Demotion of search ranking; favoring Universal Search	EU	-	41%	83rd
nntp.it	Newsgroups	2011	Demotion of search ranking	EU	-	13%	23rd
Elf Voetbal	Football resources	2011	Favoring Google OneBox	EU	-	10%	16th
Interactive Lab	Referral services	2011	Manipulation of AdWords auctions	EU	-	-	-

[i] Traffic is visits from U.S.-based browsers in January 2012 as reported by Compete.com. For U.S. websites, the search percentage is the percentage of visits from U.S.-based browsers referred by search engines, taken from Compete.com if available, and from Hitwise US otherwise. For E.U. websites, the search percentage is the percentage of visits from browsers worldwide referred by search engines, taken from Alexa.com. Regardless of the source of the search percentage data, the search percentile is found by comparing the search percentage to the distribution of search percentages computed from Compete.com data as described in the text. In cases where the complainant discussed multiple websites for which data were available, the table shows a range of search percentages. Note that due to differences in data sources, the search percentages reported here for KinderStart and Trade Comet differ somewhat from the search percentages reported in the Complaints, *supra* note 50. Also note that the search data reported here includes both paid search and navigational organic search. For most of these websites, the split between the different types of search is unavailable. As a consequence, the search percentages reported here are overstated relative to non-navigational organic search. But since the percentile rankings make the apples-to-apples comparison of total search percentage for these websites to the overall distribution of total search, this problem is alleviated when looking at the rankings. There may be some remaining difference if the ratio of non-navigational organic search to total search is substantially different for the complainants than for the general sample of websites. In our sample of websites, paid searches constitute only 9 percent of total searches on average, and other studies have found that navigational searches are infrequent relative to total searches (Brian J. Jansen, Danielle L. Booth & Amanda Spark, Determining the Informational, Navigational, and Transactional Intent of Web Queries, 44(3) Info. Processing & Manage. 1251 (2008), so this effect is likely to be small on average, and there is no particular reason to expect it to work in either direction