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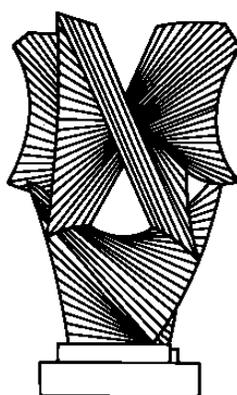
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Governing Bad Behavior by Users of Multi-Sided Platforms

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Governing Bad Behavior by Users of Multi-Sided Platforms

*David S. Evans**

October 24, 2011

Abstract

Multi-sided platforms such as exchanges, search engines, social networks and software platforms create value by assembling and serving communities of people and businesses. They generally come into being to solve a transaction problem that prevents agents from getting together to exchange value. An essential feature of these platforms is that they promote positive externalities between members of the community. But as with any community, there are numerous opportunities for people and businesses to create negative externalities, or engage in other bad behavior, that can reduce economic efficiency and, in the extreme, lead to the tragedy of the commons. Multi-sided platforms, acting selfishly to maximize their own profits, often develop governance mechanisms to reduce harmful behavior. They also often develop rules to manage many of the same kinds of problems that beset communities subject to public laws and regulations. They enforce these rules through the exercise of property rights and, most importantly, through the bouncer's right to exclude agents from some quantum of the platform including prohibiting them from the platform entirely. Private control is likely to be more efficient than social control in dealing with negative externalities on platform communities because the platform owner can monitor bad behavior more closely and deal with this behavior more expeditiously than a public regulator. The courts and antitrust authorities should exercise caution in finding anticompetitive exclusion when that exclusion is conducted as part of a governance mechanism for dealing with bad behavior of some platform users that harm other users.

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* Chairman, Global Economics Group; Lecturer, University of Chicago Law School. I would like to thank Richard Epstein for helpful comments, Margaret Schilt and Nikhil Tuladhar for excellent research help, and Google for research funding. None of these individuals or entities necessarily agrees with me and I retain sole ownership of any errors.

INTRODUCTION

If you win an auction on eBay but do not get the good, or the good is not what was advertised, you can complain to the e-commerce site in addition to giving the merchant a low rating. The site may decide to punish the merchant, including prohibiting them from ever selling again on eBay. Merchants receive protections too. If a consumer wins an auction, she is supposed to pay for the good. eBay prohibits a consumer from bidding in multiple auctions for similar goods because if she wins several auctions she will likely renege on all but one.¹

This article examines how multi-sided platforms such as eBay limit bad behavior—or more precisely negative externalities—among their customers. A multi-sided platform creates value by helping two or more different types of users interact with each other.² Users can be people or businesses and may not pay anything to use the platform. It is well known that positive externalities are central to these platforms.³ When different types of users are brought together they may be able to engage in mutually beneficial exchange. That is the case with the person who wants to sell something on eBay and the person who wants to buy it. Where a user on one side realizes more benefits from a platform that has more users on the other side, a platform may have positive network effects.⁴

The roles of negative externalities, and the governance systems that platforms have developed to deal with them, are less well understood. Yet the governance of bad behavior among members of platform communities is a worthy subject of attention for several reasons.⁵

¹ For a summary of the rules for buyers and sellers on eBay see *Rules & Policies*, EBAY, <http://pages.ebay.com/help/policies/overview.html> (last visited August 1, 2011).

² See Jean-Charles Rochet and Jean Tirole, *Platform Competition in Two-Sided Market*, 1 J. EUROP. ECON. ASS'N. 990 (2003).

³ See David S. Evans and Richard Schmalensee, *The Industrial Organization of Markets with Two-Sided Platforms*, 3 COMP. POL'Y. INT'L. 151, 154 (2007).

⁴ As Rochet and Tirole explain positive externalities for multi-sided platforms may result from either or both (a) positive externalities in use (which do not depend on the number of users on either side) and (b) positive network effects (which depend on the number of users). For example, a cardholder and a merchant jointly benefit from being able to use a card (externality in use) but both benefit if there are more users on the other side (positive network externalities). See Jean-Charles Rochet and Jean Tirole, *Two-Sided Market: A Progress Report*, 3 RAND J. ECON. 645, 647 (2006).

⁵ Rochet and Tirole, *id.*, appear to be the first to identify the role of the platform as a regulator and platform regulation. Also see David S. Evans and Richard Schmalensee, *The Industrial Organization of Markets with Two-Sided Platforms*, 3 COMP. POL'Y. INT'L. 151, 163 (2007). Boudreau and Hagiu present a detailed analysis of platform regulation and highlight the fact that platforms leverage a wide variety, and nuanced set, of instruments to maximize value. See Kevin J. Boudreau & Andrei Hagiu, *Platforms Rules: Multi-Sided Platforms as Regulators* in Annabelle Gawer, eds, *Platforms, Markets, and Innovation* 163-189 (Imperial College Business School, 2009). Boudreau and Hagiu treat all non-price instruments used by platforms as a form of regulation concerning access and interactions and as solution to market failures (in the sense that if these

First, although multi-sided platforms have existed for thousands of years, they are becoming an increasingly important part of the fabric of the economy. The development of the Internet and the web has facilitated the creation of these platforms and some of these platforms have become global businesses quite rapidly. For example, Facebook, which started in 2004, has more than 750 million active users worldwide, supports more than 500 thousand applications, and had advertising revenue in 2010 of more than \$1.8 billion.⁶ Understanding key aspects of how these platforms work helps in numerous contexts ranging from business to litigation.

Second, many of these platforms have developed governance regimes that range from rudimentary to sophisticated. These private regimes include rules, standards, detection, penalties, adjudication, and other elements found in the governance of polities. The same lens of law and economics that has helped elucidate public legal regimes is helpful for examining private legal regimes. This learning can help guide the development of more efficient governance regimes for platforms.

Third, the ability of platforms to enforce rules concerning negative externalities rests on being able to penalize and ultimately exclude members of the community. That naturally leads to disputes that sometimes end up before courts or regulatory authorities. Indeed, platforms appear to be increasingly subject to antitrust inquiries focused on whether adverse actions taken against certain types of platform users are anticompetitive. These issues arise particularly when penalties are levied against platform users that provide services that compete, or might compete, with those provided by the platform. Many of the current antitrust complaints against Google, for example, involve companies that complain that their businesses have been harmed as a result of reductions in their search ranking and that they provide vertical search services in competition with Google.⁷

strategies were not employed there would be a decrease in social surplus) and therefore consider a multitude of strategies for addressing positive and negative externalities. The present article focuses narrowly on the existence of negative externalities among platform users and the use of governance systems to deal with this bad behavior. It sees these practices as analogous to the governance systems for communities, clubs, and other similar entities. The analysis in this article is loosely related to the framework put forward by Lior Jacob Strahilovetz, *Information Asymmetries and the Rights to Exclude*, 104 MICH. LAW REV. 1838 (Aug. 2006). He argues that property rights include several subordinate rights that enable private businesses to deal with information asymmetries and examines the extent to which private property rights and public governance systems are substitutes. This article adopts his framework of subordinate property rights but then examines how these rights facilitate the development of private governance systems for multi-sided platforms that, like polities, must govern a community of members who may interact positively or negatively with each other.

⁶ Facebook, Statistics, online at <http://www.facebook.com/press/info.php?statistics> (last visited July 15, 2011). Advertising revenue from Jolie O'Dell, *Facebook's Ad Revenue Hit \$1.86B for 2010*, Mashable (Jan. 17, 2011), online at <http://mashable.com/2011/01/17/facebooks-ad-revenue-hit-1-86b-for-2010/> (last visited Aug. 1, 2011).

⁷ See Leo Cendrowicz, *The E.U. Probe: Is Google Rigging Its Search Results?*, Time (December 2, 2010), online at <http://www.time.com/time/business/article/0,8599,2034138,00.html>

Understanding the role of rules in policing negative externalities can help distinguish pro-competitive from anti-competitive business practices of platform owners.

After providing a brief introduction to multi-sided platforms, Section I situates the governance of negative externalities in the larger set of practices in which multi-sided platforms engage to maximize the value they generate for their communities as well as for themselves in the form of profits. Section II describes sources of negative externalities and relates the problems faced by multi-sided platforms to politics as well as other businesses that must deal with negative externalities created by their customers. Section III examines the governance methods platforms have developed to manage these problems. It draws on research concerning the business practices of multi-sided platforms in a diverse set of industries and over time. Section IV provides detailed examinations of four economically significant industries that highlight platform governance: social networks, stock exchanges, search engines, and software platforms. Section V analyzes the legal and policy issues that arise from disputes involving platform governance. It considers the distinction between efficient regulation of negative externalities and anticompetitive exclusion as well as the use of social versus private control over negative externalities in platform communities.

I. MULTI-SIDED PLATFORM STRATEGIES FOR INCREASING VALUE

eBay creates value through the well-known process of exchange. An individual finds an antique sewing machine in their attic but places little value on it. Another individual collects antique sewing machines. eBay provides a platform for those two individuals to find each other and make a trade. The collector pays money to the sewing machine owner and the collector gets the sewing machine. They are both better off as a result. The sewing machine owner could have sold his machine to an antique store and the collector could have gone to antique stores to find the sewing machine. The e-commerce platform can provide a more efficient means of commerce in antique sewing machines because it can aggregate the demand of many

(last visited August 23, 2011); *Companies Ask EU Commission to Step in on Google Search Ranking Complaint*, IProPortal (February 24, 2010), online at <http://www.itproportal.com/2010/02/24/companies-ask-eu-commission-step-google-search-ranking-complaint/> (last visited Aug. 23, 2011); Claire Cain Miller, *Texas Probes Google on Ranking of Search Results*, *The New York Times* (September 3, 2010), online at <http://www.nytimes.com/2010/09/04/technology/04google.html?adxnnl=1&adxnnlx=1314113487-4SfkO0V/SuFxNfcRMdHkbQ> (last visited August 23, 2011); *Kinderstart Sues Google Over Lower Page Ranking*, *USA Today* (March 19, 2006), online at http://www.usatoday.com/tech/news/2006-03-19-google-kinderstart_x.htm (last visited August 23, 2011).

antique sewing machine owners and many buyers and help bring them together to engage in trades.

All two-sided platforms exhibit these same features. There are two types of users that can generate value by coming together. That could be a man and a woman who are looking for companionship, a sender and receiver of money, a mobile software application developer and a mobile phone user, a search engine user and an advertiser, or many other combinations. The platform may provide a number of services to reduce the transactions costs for these users to come together and to exchange value. Those services could include facilities to search and match users, to figure out exchange values, and to settle transactions.

The two types of users do not necessarily need to value each other. It is sufficient that it is possible to create net value by putting them together. A company may value presenting advertising to a consumer but the consumer may be indifferent to the advertising or even willing to pay to avoid it. So long as the value of presenting advertising to the consumer is greater than the cost to the consumer of receiving it, there are potential gains to trade. The role of a platform for advertising-supported media is to “pay” the consumer to be exposed to advertising by providing content. In effect, the media platform owner uses some of the money that the advertiser is willing to pay to reach a user to fund content creation that incentivizes users to be exposed to advertising in return for “free” media content.

In the canonical model of two-sided platforms, the demand functions for at least one group of users depend on these users being able to access and interact with the members of another group of users. In most cases outside of advertising, the two groups are complementary to each other. In these instances, the platform owner maximizes profit by choosing prices and other strategic variables that recognize the interdependences. An extensive economic literature examines the characteristics of profit-maximization by platform owners, competition among platforms, and the dynamics of platform entry and growth.⁸

Some multi-sided platforms have more than two groups of agents. Facebook, for example, is four-sided. It is a communications platform for senders and receivers of information. This communications platform is also open to advertisers who want to reach the people that are using Facebook to communicate with each other. It is further made available to entrepreneurs who develop software applications—such as social games—that run on Facebook. There are interdependencies among these four groups of

⁸ See E. Glen Weyl, *A Price Theory of Multi-Sided Platforms*, 100 AMER. ECON. REV. 1642, (2010). Weyl presents a general framework that encompasses and extends the earlier work by Rochet and Tirole and by Armstrong. See Jean-Charles Rochet and Jean Tirole, *Two-Sided Market: A Progress Report*, 3 RAND J. ECON. 645 (2006); Mark Armstrong, *Competition in Two-Sided Markets*, 37 RAND J. ECON. 668 (2006).

economic users.

Most of the economic literature has focused on the pricing policies of multi-sided platforms.⁹ It is now well established that profit-maximizing prices must solve a coordination problem between the multiple sides. A group of users will usually place no value on a platform unless one or more of the other groups of users are also on the platform. Moreover there have to be enough users on the other side to generate value. The pricing structure—the relative prices that each group of users pays—is important for solving this coordination problem. The profit-maximizing prices may be at or below marginal cost, and may be zero or negative, and therefore reflect a type of subsidy to one side. (The social welfare maximizing prices have the same characteristics although there is no guarantee that the privately and socially optimal prices will coincide.¹⁰)

In practice, multi-sided platforms use a wide variety of mechanisms to generate value for platform users and to structure how much net value each group of users receives.¹¹ Platforms simultaneously determine how to maximize the overall value of the platform for the users and the allocation of this value among both user groups and the platform owner. Slicing the pie differently results in bigger or smaller pies because of the interdependencies between the groups. The platform owner therefore needs to figure out how to slice the pie in order to make the pie as big as possible.

The governance of negative externalities is part of this larger set of mechanisms for maximizing and allocating value.

A. The Platform Toolkit

Multi-sided platform businesses have a number of ways to solve coordination problems and generate value for users.

Once an entrepreneur has identified a coordination problem that can be solved with a multi-sided platform, she needs to develop a design and a set of products and services that will solve that problem. There is much work between recognizing latent demand for video sharing and the creation of a platform to meet that need. YouTube had to design a software and

⁹ See E. Glen Weyl, *A Price Theory of Multi-Sided Platforms*, 100 AMER. ECON. REV. 1642 (2010).

¹⁰ The privately optimal prices set by a multi-sided platform may differ from the socially optimal prices if the platform sets prices too high and output too low. But it may also select a pricing structure that does not solve the coordination problem between the groups of users as efficiently as a social planner would. See Alexander White & E. Glen Weyl, *Insulated Platform Competition*, NET Institute Working Paper No. 10-17 (2011).

¹¹ See David S. Evans & Richard Schmalensee, *Catalyst Code: The Strategies Behind the World's Most Dynamic Companies* (HBS 2007); Thomas Eisenmann, Geoffrey Parker & Marshall W. Van Alstyne, *Strategies for Two-Sided Markets*, HARV. BUS. REV. 92 (Oct. 2006); Kevin J. Boudreau & Andrei Hagiu, *op. cit.*

hardware platform that enabled people to upload and view videos. That design included features that helped people who uploaded videos to find an audience and helped people who wanted to view videos to find ones they would enjoy. The term “platform design” refers to aspects of the platform that facilitate the interaction of the different types of users.

Platforms also provide specific packages of products or services to each type of user. As with a single-sided business, the platform has to decide on the optimal combination of product attributes and price. The difference in the case of a multi-sided platform is that offerings that induce users on one side to join the platform and interact often provide value to the users on the other side. Operating system designers frequently provide software developers with software developer kits (SDKs) and other assistance to facilitate the efficient development of software that works on the platform. End users benefit from those quality enhancements indirectly.

Platforms may charge users fees for access and/or use. They can in some cases adjust these prices to achieve an optimal combination of users given their demands. That may entail having a higher incremental profit margin from one side than the other. It also may lead to implicit subsidies to some or all users on one side. OpenTable, for example, charges restaurants for participating in its platform and a fee for each reservation made through the platform; people can make reservations and access other additional services such as reviews, directions, and restaurant suggestions for free.¹²

Finally, and a central subject of this article, platforms can develop and employ governance systems that regulate the actions of participants. These systems can employ implicit or explicit contracts, detection mechanisms, and penalties.

B. Value Creation and Externalities

These tools are important for achieving the fundamental economic purpose of a platform: to release value by bringing users together. eBay did this by creating a website where sellers could post products for sale, developing an auction mechanism that allowed buyers to bid for those products, providing a convenient payment mechanism that enabled sellers to receive funds from buyers, a rating system that enabled buyers to communicate information about the sellers they dealt with to other buyers, and rules to ensure the integrity of the bidding and selling process. One study of eBay found that the buyers obtained consumer surplus that

¹² See Farhad Manjoo, *As OpenTable Booms, Who Gets the Dough?* Fast Company (April 20, 2011), online at <http://www.fastcompany.com/magazine/155/as-opentable-booms-who-gets-the-dough.html> (last visited August 23, 2011).

averaged about \$4 per purchase and totaled more than \$7 billion in 2003.¹³ The sellers earned surplus as well, equal to the difference between what they netted from buyers and their personal valuations of the goods.

Platforms rely on the tools described above to maximize the value they create for users overall subject to various constraints including costs. A core challenge is enabling users that can engage in mutually beneficial exchanges to find each other. That is partly addressed through platform design. Online dating sites such as eHarmony rely on detailed questionnaires and learning from psychology to find matches for people and then have a process for people to narrow their searches.

The platform also needs to ensure that there are “high-quality” matches in which the users can split significant value. For many multi-sided platforms, the likelihood of high-quality matches increases with the number of participants. To develop thicker markets, platforms use pricing and other tools to drive participation and positive feedback effects. Some stock exchanges, for example, provide subsidies to providers of liquidity.¹⁴ More liquidity providers attract more liquidity takers that, in turn, drive more liquidity providers.

C. Value Distribution and Coordination

As these examples illustrate, value creation is intimately connected to value distribution. A platform has to secure the participation of each side in sufficient numbers to generate value. That involves solving a coordination problem. Members of each group of users would benefit from being on the platform but they will not join the platform unless enough members of the other groups join as well.

The economic literature on two-sided markets demonstrates the role of the pricing structure in solving this coordination problem. By tilting the pricing structure so that one side contributes relatively more incremental margin and the other side contributes relatively less incremental margin, the platform can potentially entice enough members of each group to join. Once they do, positive feedback effects can fuel growth.

These economic models focus, for simplicity, on the prices that agents are charged. More generally, however, platforms provide net value to members of each group where that net value is the difference between the total value received and the total cost incurred by that member. Platforms

¹³ See Ravi Bapna, Wolfgang Jank & Galit Shmueli, *Consumer Surplus in Online Auctions*, 19 INFO. SYS. RES. 400, 400 (2008).

¹⁴ See NYSE Euronext, 2010 Annual Report - Form 10-K (Feb. 28, 2011) 22.

solve the coordination problem through adjusting what users receive¹⁵ as well as how much they pay. Apple provides many features on its phones that users find attractive. It also provides software developers with an operating system, tools, and a store for selling applications that they find appealing.

In deciding the relative benefits realized by each group of agents the platform necessarily makes decisions that allocate benefits between different groups of users. All else equal, charging one group less means charging another group more. The point extends beyond pricing. Platforms make design and other decisions that shift the relative benefits between the two sides. Shopping malls, for example, often place anchor stores that attract the most shoppers as far apart as possible, put up and down escalators far apart, and make other physical design decisions to increase the foot traffic in front of stores. They therefore convey an added benefit on the stores, who pay for space at the mall, while imposing some costs on shoppers who get in for free.¹⁶

II. NEGATIVE EXTERNALITIES AND PLATFORM COMMUNITIES

Platforms create communities of users with shared interests who benefit from being together. Successful platforms have identified positive interdependencies between users, figured out how to reduce transactions costs between these users, and determined price and non-price mechanisms for bringing these users together, thereby coordinating them into a community. Google, for example, has created a community around its Android operating system consisting of consumers, software developers, hardware manufacturers, and mobile carriers.¹⁷

In many situations in which users have formed a community, they can harm as well as benefit each other. Members of a polity can cause fires, inflict bodily harm, pollute, make the neighborhood look bad, commit fraud, cause congestion, and engage in many other kinds of behavior that

¹⁵ That is, the platform may decide to shift the demand schedule for a group of users to the right or the left by providing more or fewer product attributes that these users value.

¹⁶ For a general analysis of strategies in which platforms increase consumer search costs see Andrei Hagiu & Bruno Jullien, *Why do Intermediaries Divert Search?*, 42 RAND. J. ECON 337 (2011).

¹⁷ See Wilson Rothman, *Analysis: Google's Android Phone and the Four Carriers*, Gizmodo (Nov 5, 2007), online at <http://gizmodo.com/319127/analysis-googles-android-phone-and-the-four-carriers> (last visited Aug. 1, 2011); Adam Dachis, *Google and Hardware Manufacturers Promise Android Software Upgrades For 18 Months*, Lifehacker (May 10, 2011), online at <http://lifehacker.com/5800425/google-and-hardware-manufacturers-promise-android-software-upgrades-every-18-months> (last visited Aug 1, 2011); Erik Sherman, *Amazon Teaches App Developers to Smarten Up the Hard Way*, BNet (Aug. 4, 2011), online at <http://www.bnet.com/blog/technology-business/amazon-teaches-app-developers-to-smarten-up-the-hard-way/12146> (last visited Aug. 1, 2011).

hurt other members of the community. People benefit from joining clubs to share costs and companionship. But members can also impose costs on each other from, for example, being unpleasant or unkempt. Other entities also face negative externalities. For a highway system, drivers can cause congestion, cause harm by driving carelessly and emit noxious gases. Fisheries have the well-known problem of over fishing. In all these cases the members collectively would like the community—the polity, club, or entity—to be governed in a manner that discourages negative externalities. Communities usually adopt mechanisms to do so.

Although the purpose of a multi-sided platform is to generate positive externalities some of the users may impose negative externalities in many of the same ways and for many of the same reasons as other communities. This section examines the sources of negative externalities and the next considers governance systems for dealing with them.

A. Fraud, Misrepresentation, and other Opportunistic Behavior

All varieties of opportunistic behavior occur on platforms. There is fraud. Merchants, for example, sell counterfeit goods¹⁸ or take payment but then do not ship the goods.¹⁹ There is misrepresentation. People lie about their age or their weight on dating sites,²⁰ what their applications will do on a smartphone,²¹ or how popular their websites are.²² This list does not exhaust the ways in which opportunistic behavior can occur on platforms. For example, firms can encourage their employees to click on a competitor's ads on search engines to impose costs on them.²³

¹⁸See Rob Unsworth, *Amazon Marketplace Offering Dangerous Goods*, BBC (Dec. 8, 2008), online at http://www.bbc.co.uk/blogs/watchdog/2008/12/amazon_marketplace_offering_da.html (last visited Aug. 1, 2011).

¹⁹See Amazon Marketplace and Ebay Fraud, Andre Gunther Photography, online at <http://www.aguntherphotography.com/blog/amazon-marketplace-ebay-fraud.html> (last visited August 23, 2011).

²⁰See *Illusion or Deception? Why do some people misrepresent themselves on dating sites?*, eH Advice, online at <http://advice.eharmony.com/boards/dating-advice/dating/50844-illusion-deception-why-do-some-people-misrepresent-themselves-dating-sites-3.html> (last visited Aug. 1, 2011).

²¹See Claudine Beaumont, *Google remotely deletes Android apps*, The Telegraph (Jun. 25, 2010, 4:31 PM), online at <http://www.telegraph.co.uk/technology/google/7854560/Google-remotely-deletes-Android-apps.html> (last visited Aug. 1, 2011).

²²See Tom Espiner, *Google blacklists BMW.de*, Cnet News (Feb. 6, 2006), online at http://news.cnet.com/Google-blacklists-BMW.de/2100-1024_3-6035412.html (last visited Aug. 1, 2011).

²³See Dan Shipe, *Is AdWords Click Manipulation Taking Money From your Pocket?*, Articles/Net (Aug. 29, 2008), online at http://www.articleslash.net/Internet-and-Businesses-Online/PPC-Advertising/475634_Is-AdWords-Click-Manipulation-Taking-Money-From-Your-Pocket.html (last visited Aug. 1, 2011).

B. Poor and Asymmetric Information

A standard problem in the exchange of value is that one party has information that the other party does not have. The failure to disclose information imposes costs on actual and potential trading partners. In the extreme this can lead to market breakdowns as a result of the lemons problem.²⁴ The collapse of the videogame market in the United States in 1983 is often attributed to a proliferation of low quality games driving out good quality games.²⁵ More generally it reduces market efficiency by reducing the likelihood that users will find the matches that maximize the total value from trade. Several studies have found that requiring corporate bond traders to disclose information on trading prices resulted in improved efficiency and substantially lower trading costs.²⁶ Opportunistic behavior resulting from asymmetric information may increase the uncertainty for people and companies that are considering using a platform. Traders may prefer platforms that have transparent pricing and social network users may prefer platforms where information about people is reliable.

Asymmetric information does not necessarily result in negative externalities for a platform overall. Users may need to have incentives to invest in acquiring information, and being able to capitalize on their control over that information may provide those incentives. The benefits from increased dynamic efficiency from investment in gathering information may outweigh the losses from lower static efficiency as a result of not sharing that information.²⁷ Greater transparency on social networks has its costs too. Information that increases the value of one relationship may decrease the value of another relationship.²⁸

²⁴ See George A. Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 *QUART. J. ECON.* 488 (1970).

²⁵ See David S. Evans, Andrei Hagiu & Richard Schmalensee, *Invisible Engines: How Software Platforms Drive Innovation and Transform Industries*, 125 (2006).

²⁶ These studies concern the introduction of the TRACE system for corporate bonds in the United States. See Hendrik Bessembinder, William Maxwell, and Kumar Venkataraman, *Market Transparency, Liquidity Externalities, and Institutional Trading Costs in Corporate Bonds*, 82 *J. FINAN. ECON.* 251 (2006); Amy Edwards, Lawrence Harris & Michael Piwowar, *Corporate Bond Market Transparency and Transaction Costs*, 62 *J. FINANCE* 1421 (June 2007); Michael Goldstein, Edith Hotchkiss & Erik Sirri, *Transparency and Liquidity: A Controlled Experiment on Corporate Bonds*, 2 *REV. FINAN. STUD.* 235 (2007). For a summary, see William F. Maxwell & Hendrik Bessembinder, *Transparency and the Corporate Bond Market*, 22 *J. ECON. PERSPECT.* 217 (Spring 2008).

²⁷ Studies of increased transparency in bond markets found that it may have reduced liquidity leading to some markets being inefficiently thin. Hendrik Bessembinder & William Maxwell, *Transparency and the Corporate Bond Market*, 22 *J. ECON. PERSPECT.* 217, 228 (2008).

²⁸ See Danah Boyd, *None of this is Real* in Joe Karaganis, ed., *Structures of Participation in Digital Culture* 132, 145 (SSRC 2007). For the record, Ms. Boyd does not capitalize her first or last name. This imposes a negative externality on people, like me, who then have to deal with editors and readers who are not in on the deviation from grammatical rules.

C. Congestion and Optimizing Physical Spaces

Negative externalities can result from increasing the number of users for multi-sided platforms. Physical platforms face congestion problems. A nightclub provides a trivial example. Too many people will make it harder for people to mingle and enjoy themselves. A shopping mall provides a more interesting example. An increase in the number of merchants may increase search costs and therefore harm other sellers as well as buyers.

Multi-sided platforms have to design and manage their spaces to reduce negative externalities as well as to promote positive externalities. Expanding the footprint of a mall to accommodate more stores imposes costs on shoppers who have to walk farther on average. Similar considerations apply to virtual platforms. Search engines need to make decisions on how many results and advertisements to display on a page and in what format. They need to do this to promote positive externalities and also to limit congestion and reduce search costs.

D. Personal Harm

Polities have rules to prevent people from assaulting other people, engaging in bodily harm, libel, and causing mental distress. These issues can arise on multi-sided platforms as well. Interactions on nightclubs and other physical and virtual dating venues can result in bodily harm. Social networks can be used for engaging in libel and can cause mental distress. A highly publicized case involved the use of a social network by a Lori Drew to retaliate against a girl, Megan Meier, who had a disagreement with her daughter. Using a fake account Drew orchestrated an online romance with Meier, had the fake boy become hostile, and eventually had the fake boy suggest that Meier kill herself, which she did.²⁹

E. Offensive Behavior

Interactions on multi-sided platforms can involve behavior that some users find offensive. This is no different than a regular community. People may incur costs as a result of unwanted exposure to hate speech, pornography, videos of violence, and other offensive content. Even if they are not exposed to this content they may dislike being part of a community

²⁹ See Associated Press, *Mom: MySpace Hoax Led to Daughter's Suicide*, Fox News (Nov. 16, 2007), online at <http://www.foxnews.com/story/0,2933,312018,00.html> (last visited Aug. 1, 2011).

in which it takes place.

F. Opportunistic Behavior

Platform users can engage in various kinds of opportunistic behavior that do not fall neatly into one of the categories above. Brokers on exchange platforms could engage in front running—that is profiting from information on trades placed by clients possibly to the detriment of the client. That creates an agency problem in addition to an asymmetric information issue. Merchants may impose surcharges on people that pay with a payment card as a result of using the desire to pay with a card as a sorting device in a price discrimination scheme. Such behavior could impose negative externalities on the payment card product by increasing uncertainty about its costs.

G. DecorMyEyes

Vitaly Borker's strategies for selling eyewear on the web highlights almost all these forms of bad behavior although it also provides a lesson in what happens when platform governance is imperfect. Mr. Borker learned that search engines did not distinguish between good and bad cites to his website. He responded to complaints with highly offensive emails that generated even more complaints. He told a *New York Times* reporter, "I've exploited this opportunity because it works. No matter where they post their negative comments, it helps my return on investment. So I decided, why not use that negativity to my advantage?"³⁰

Mr. Borker, who used the aliases Tony Russo and Stanley Bolds, received many complaints because he engaged in fraudulent behavior including adding spurious charges to customers' payment cards. When people pursued their complaints against him, Mr. Borker—sometimes using one of his aliases—threatened them with bodily harm including death or rape. He threatened one woman who was overcharged with sexual violence when she said she was going to have her credit card issuer reverse the charge. She was later sent pictures of the outside of her apartment building in a further attempt to intimidate her.

Mr. Borker relied heavily on two web platforms for these practices. He fulfilled his orders from sellers on eBay who were directed to ship to his customers. He also used search engine rankings to drive business. Initially, at least, the governance systems of these platforms failed to thwart him. In

³⁰ David Segal, *A Bully Finds a Pulpit on the Web*, *The New York Times* (November 26, 2010), online at <http://www.nytimes.com/2010/11/28/business/28borker.html> (last visited on August 22, 2011).

the case of search he had discovered a way to game the search algorithm as well as the detection methods then in place for identifying efforts to distort results. After the story was reported, Google developed an algorithm to detect efforts to increase search rankings by encouraging bad comments.³¹ Meanwhile, public law took care of Mr. Borker who pled guilty to wire fraud, mail fraud, and sending threatening communications.³²

III. DEALING WITH BAD BEHAVIOR

Multi-sided businesses could simply rely on civil and criminal law and government regulation to deal with the negative externalities that arise on their platforms.³³ Users have recourse to laws involving breach of contract, fraud, market manipulation, assault and battery, and intentional infliction of emotional distress to deal with many of the problems discussed above. Laws and regulations have tackled asymmetric information problems through mandatory disclosure rules, cooling off periods, and return policies. New multi-sided platform businesses can give rise to novel issues such as cyber bullying. Governments can pass new laws in response to this as the State of Missouri did after the Megan Meier suicide and the unsuccessful prosecution of the instigator.³⁴

Some multi-sided platforms, have, however developed their own mechanisms for dealing with bad behavior. They adopt rules for the users on one or more sides of the platform, have reporting and detection mechanisms to uncovering violations of these rules, evaluations of the evidence including mandatory arbitrations, penalties, and sometimes even have appeals from the initial evaluation.

There are two reasons for platforms not relying entirely on the public sector.

The first is that the platforms generally are able to enforce rules to reduce negative externalities more rapidly and efficiently than the public

³¹ Alyson Shontell, *Making Customers Hate You Makes Google Love You*, Business Insider (December 3, 2010), online at <http://www.businessinsider.com/making-customers-hate-you-makes-google-love-you-2010-12> (last visited on August 22, 2011).

³² Kathy Kristof, *Online Retailer Guilty of Fraud, Threats*, CBS Moneywatch.com (December 6, 2010), online at <http://moneywatch.bnet.com/saving-money/blog/devil-details/online-retailer-charged-with-fraud-threats/3478/> (last visited on August 22, 2011).

³³ According to the Coase Theorem, of course, absent market failures such as imperfect information, the agents could deal with these problems efficiently through private contracting. The emergence of the platform itself, however, indicates that information is imperfect, or there is some other transaction cost, and the Coase Theorem does not hold. See Jean-Charles Rochet and Jean Tirole, *Platform Competition in Two-Sided Market*, 1 J. EUROP. ECON. ASS'N. 990 (2003).

³⁴ See Associated Press, *Mo. Internet Harassment Bill Passed After MySpace Suicide*, USA Today (Jul. 1, 2008, 1:16 PM), online at http://www.usatoday.com/news/nation/2008-06-30-internet_N.htm (last visited Aug. 1, 2011).

sector can.³⁵ Search engines can develop algorithms for detecting efforts to manipulate search rankings and delist websites that are trying to take advantage of users or demote them in the search rankings. An e-commerce platform can decide after a few complaints to drop a merchant from its site and exchanges can debar traders. In addition to the inherent differences in the efficiency of public and private actors, the fact that the public sector must give people and businesses rights of due process (which society has found necessary to check the government's enormous powers over its citizens) necessarily makes the enforcement of laws and regulations by the public sector more time consuming and expensive. A platform owner, for example, can monitor a user's behavior without showing probable cause, as would the government exercising its police powers. A platform can therefore provide value to its community by providing an efficient governance system.

The second reason for a platform to take action is that public laws and regulations may be incomplete when it comes to policing negative externalities on platforms. The government may not have recognized a problem such as cyber bullying on social networks or the opportunistic inflation of search rankings. It may have other objectives or obligations such as the protection of free speech that deter or preclude it from enforcing rules that private parties may decide to adopt themselves—such as against hate speech or pornography. The government may also decide not to pursue various problems simply because the cost of doing so—including unintended consequences that often result from government laws and regulations—exceeds the likely benefits. The platform has more information about the problems, can react more quickly to them, and can modify its governance mechanisms more quickly if they are not working or are having perverse effects.

A private platform does not, of course, have the same range of instruments available to it as a public entity does. It cannot issue search warrants, engage in wiretaps, conduct dawn raids, put people in jail, or debar wrongdoers from anything other than participating on the platform itself. Unless it invokes public laws, for example by filing a breach of contract case, it cannot compel the discovery of information for an investigation. Nor can a private platform collect penalties unless it has required a bond or collects them as a condition of the agent having continued access to the platform.

In fact, all of the platform's powers, aside from contract and other rights that it would have to enforce in public courts, rest in its property

³⁵ For a related discussion see Henry Smith, *Property and Property Rules*, 79 N.Y.U.L. REV. 1719 (2004); Henry Smith, *Exclusion and Property Rules in the Law of Nuisance*, 90 VA. L. REV. 1 (2004).

rights over the platform including, most importantly, its ability to exclude. This section elaborates on this point before turning to an overview of platform governance concerning negative externalities.

A. Platform Governance and Exclusion

Strahilovetz has presented a useful framework for analyzing how property rights can be used to deal with information asymmetries.³⁶ The right to exclude has four subordinate rights: (1) the Hermit's right to keep all agents off the owner's property; (2) the Bouncer's right to admit agents selectively to the property and therefore to eject agents selectively from the property; (3) the Exclusionary Vibe which uses social and psychological sanctions to discourage some agents from entering the property; and (4) the Exclusionary Amenity which uses club goods to sort desirable and undesirable entrants. He argues that the last three of these rights are substitutable methods for maximizing the value of the property.

Strahilovetz's framework generally maps well into the tools that multi-sided platforms use to optimize the value of their property. Some multi-sided platforms start out life single-sided. For example, the Palm Pilot created their own applications and did not allow others to do so for about 18 months after their launch. They exercised Hermit Rights through design decisions.³⁷ Almost all of the strategies for reducing negative externalities depend on the exercise of the Bouncer's Right. This is discussed in more detail in the next section. The Exclusionary Vibe and Exclusionary Amenity are used by many platforms to attract a particular group of users on one side that is valuable to a particular group of users on the other side. There is a blurry line between the two strategies for multi-sided platforms. Niche magazines are an example. *Runners World* is designed to attract runners and companies that want to sell to them. The vibe and amenity go together—companies that want to advertise to runners are attracted to the amenity by an aggregation of runners created by the vibe generated by the content (not to mention the title).

Smith, who Strahilovetz builds on, argues that property rights and governance are substitutes from the standpoint of maximizing social welfare.³⁸ The idea is that there are some market failures that governments

³⁶ See Lior Jacob Strahilovetz, *Information Asymmetries and the Rights to Exclude*, 104 Mich. L. Rev. 1838, ___ (August 2006). Boudreau and Hagiu, id., emphasize the “bouncer’s right” identified by Strahilovetz. However, in the context of their analysis of the general solution by platforms of market failures platforms also use the exclusionary vibe (e.g. a magazine for a niche audience) and the exclusionary amenity (an discount department store as an anchor in a mall).

³⁷ See David S. Evans, Andrei Hagiu & Richard Schmalensee, *Invisible Engines: How Software Platforms Drive Innovation and Transform Industries*, 169 (MIT 2006).

³⁸ See Henry E. Smith, *Exclusion Versus Governance: Two Strategies for Delineating Property Rights*, 31 J. LEGAL STUD. 453 (2002).

can resolve precisely through laws and regulation. There are others that private parties can solve through the blunt instrument of property rights because they have better access to information.

Multi-sided platforms can be analyzed in this framework. They represent the interests of a community—albeit a private and voluntary one—just as a government does, and are perhaps even more motivated than the government to maximize, at least approximately, the social wealth of that community. The platform owner also has incentives to take the long-run interests of the community into account since it is maximizing the long-run value for itself or its shareholders. The platform often uses, among other things, a governance system for dealing with negative externalities among platform users. But for the platform, property rights—and the bundle of rights to exclude identified by Strahilovetz, and in particular the Bouncer’s Right—are necessary for governance.

B. Governance and Property Rights

Platform governance generally consists of a set of rules for platform agents that proscribe certain actions by these agents or compel certain other actions. These rules can be used to increase positive externalities. For example, card networks require banks to insert acceptance marks on cards and merchants to post acceptance marks; this makes it easier for cardholders and merchants who use the same payment method to find each other. More commonly, though, rules are designed to eliminate or mitigate negative externalities. These rules need to have consequences to be meaningful. Those consequences generally involve partial or full exclusion from the platform, or its benefits, for some period of time, including forever. The platform also needs to be able to detect violations for these rules to be meaningful. That could be a combination of proactive detection or response to complaints. And finally, the platform may employ a process in which suspected wrongdoers can plead their cases, or at least convey potentially useful information, and possibly an appeals process.

The Portobello Road Antique Dealers Association in London provides an example.³⁹ A number of antique dealers have located on Portobello Road in London. That is a common situation in the economic geography of agglomeration and is an example of a platform that emerges naturally without any necessary ownership. But some of these dealers decided to start an association to address common issues. One of those issues involved creating and maintaining a high quality brand. For this purpose they adopted a code of ethics. Members are required to post the

³⁹ See David S. Evans & Richard Schmalensee, *Catalyst Code: The Strategies Behind the World’s Most Dynamic Companies 110-111* (HBS 2007).

price and as much information as possible about the item. The code also prohibits members from misrepresenting antiques or misleading their customers. The association also provides a dispute resolution service for customers who believe they have gotten a bad deal. Members who violate the code can be bounced from the association and therefore lose access to the signal that it provides to customers.

Other commerce platforms have similar rules. eBay has a detailed user agreement for buyers and sellers.⁴⁰ It tells users that eBay has the right to restrict their access to the site in various ways, including full termination, if the user abuses the site.⁴¹ The user agreement includes a mandatory dispute resolution mechanism for buyers and sellers. eBay has detailed rules for buyers⁴² and sellers⁴³ that prohibit a variety of actions that could result in negative externalities. A major concern is the integrity of the auction process. For example, buyers are not allowed to bid on items offered by sellers they know personally. Sellers who are banned from the site can appeal that decision.⁴⁴

These types of rules solve several possible externality problems. Card users likely value certainty over the prices they will pay when they use their cards at accepting merchants; they also likely value the certainty that merchants that advertise through signage that they accept the network's card actually do so. To the extent that merchants impose surcharges or refuse cards they impose costs not only on the cardholders affected by these decisions but also cardholders generally through the introduction of uncertainty. In addition, merchants that surcharge cards or refuse to accept cards selectively may impose costs on other merchants by degrading the overall quality of this form of payment. There is a further negative externality. Some merchants may use the desire to pay with a card as a

⁴⁰ See eBay, Your User Agreement, online at <http://pages.ebay.com/help/policies/user-agreement.html> (last visited Aug. 1, 2011).

⁴¹ The user agreement, *id.*, says "Without limiting other remedies, we may limit, suspend or terminate our service and user accounts, prohibit access to our sites and their content, services and tools, delay or remove hosted content, and take technical and legal steps to keep users off the sites if we think that they are creating problems or possible legal liabilities, infringing the intellectual property rights of third parties, or acting inconsistently with the letter or spirit of our policies (for example, and without limitation, policies related to shill bidding, conducting off-eBay transactions, feedback manipulation, circumventing temporary or permanent suspensions or users who we believe are harassing our employees or other users). Additionally, we may, in appropriate circumstances and at our discretion, suspend or terminate accounts of users who may be repeat infringers of intellectual property rights of third parties. We also reserve the right to cancel unconfirmed accounts or accounts that have been inactive for a long time, or to modify or discontinue eBay sites, services or tools."

⁴² See eBay, *Your User Agreement*, online at <http://pages.ebay.com/help/policies/buyer-rules-overview.html> (last visited Aug. 1, 2011).

⁴³ See eBay, *Rules For Sellers – Overview*, online at <http://pages.ebay.com/help/policies/seller-rules-overview.html> (visited Aug. 1, 2011).

⁴⁴ See eBay, *Rules For Sellers – Overview*, online at <http://pages.ebay.com/help/policies/seller-rules-overview.html> (visited Aug. 1, 2011).

method for implementing price discrimination. On average consumers that want to pay with cards are less likely to have another equally convenient payment method and may therefore be willing to pay a higher price to the merchant. This may be a profit maximizing strategy especially for when it is unlikely the consumer would be a repeat customer (e.g. a tourist).

A common problem for dating sites involves preventing unwanted approaches. Sites such as eHarmony check their users against lists of registered sex offenders. They also do not allow users to search for profiles. Instead the site matches profiles using its algorithm. An introduction is made only if both parties agree to this. At that point, individual identifying information is made available to both parties. eHarmony also provides a service whereby users can report problems and eHarmony can take actions including removing offending individuals from its service.⁴⁵

While many multi-sided platforms have governance systems to limit negative externalities, others do not or have quite limited ones. In the next section we will see how MySpace, the leading social network site in the United States in the mid 2000s, had a very limited governance system initially and imposed some rules only in response to significant media and governmental pressure. Advertising supported media tend to have very limited screening of ads. They often prohibit advertisements that would be offensive to their readers. The Chicago Tribune does not intentionally take advertisements for sex services although Craigslist does. But they do not police false advertising or provide readers with any mechanism for complaining about advertisers they have interacted with as a result of seeing an advertisement in the media.

The rules discussed above are generally enforced using the Bouncer's Right. Users that violate the rules can be ejected from the platform. Some people—such as known sexual predators on dating sites—are barred from getting on the platform in the first place.

C. Governance and Information Provision

Multi-sided platforms also provide information to deal with negative externalities. That has become increasingly common as a result of the development of Internet and web technologies. eBay Motors has reduced

⁴⁵ Pam Holmgren, *A Safety Reminder from eHarmony*, *eHarmony Blog* (Apr. 18, 2011), <http://advice.eharmony.com/blog/2011/04/18/a-safety-reminder-from-eharmony-2/> (last visited August 1, 2011). "If you ever are concerned about one of your matches for any reason, please send an email to matchconcerns@eharmony.com so we can investigate and take appropriate action. We have a team dedicated to our members' safety and close accounts immediately when we receive a credible complaint about someone's suspicious behavior. We'll notify you whenever someone is removed from the service, so please pay attention to those emails if you ever receive one and stop all communication with that person."

the lemons problem by providing ratings on automobile dealers. eBay provides a mechanism for consumers to rate merchants after they have made a purchase. They send consumers reminders to provide these ratings. A consumer can minimize the likelihood of getting a car with undisclosed problems by buying from an automobile dealer that has a very high rating. Automobile dealers presumably know that a negative rating can have a serious effect on their ability to make sales. The reviews limit the ability of automobile dealers to take advantage of consumers by exploiting asymmetric information. They also limit the ability of dealers to impose negative externalities on each other since bad dealers tend to drive out good dealers as consumers lower their expectations on the quality of cars they get. Similar rating systems are common now on web-based platforms that connect buyers and sellers.

The provision of information is often an application of the Exclusionary Vibe. The multi-sided platform is exercising its property rights when it collects information from users on the platform about other users and makes it available. It does not bounce users that engage in opportunistic behavior, or users that create negative externalities as a result of the lemons problem, but it does establish a mechanism that tends to drive low quality users off of the platform.

The Exclusionary Vibe can be used to reduce negative externalities in other ways than the direct provision of information. An example is JDate which advertises itself as the premier Jewish singles community.⁴⁶ One would expect that having Gentiles would impose negative externalities on Jews looking for other Jews since it would increase their search costs and reduce matching inefficiency. It would not appear that the site has any way to judge religious or ethnic background, so it could not specifically exclude non-Jews. But it can set off a vibe that this is a site meant for Jewish men and women to meet each other. It also at least asks Gentiles to identify themselves.

IV. GOVERNANCE REGIMES FOR KEY PLATFORMS

Four economically prominent platform types illustrate the role of governance systems, the methods that are chosen for these governance systems, and the tensions that governance systems create between the platform sides.

A. Social Networks

The evolution of social networks from Friendster to MySpace to

⁴⁶ See JDate, online at <http://www.jdate.com/> (last visited Aug. 1, 2011).

Facebook shows the role of negative externalities in platforms that are perhaps the closest to traditional communities and how different treatments of the negative externalities can affect platform value.

Friendster launched in 2002 and grew rapidly.⁴⁷ Jonathan Abrans, its founder, thought the dating sites of the time were “too anonymous and creepy.”⁴⁸ They also provided inaccurate information. As he put it, “With JDate, a guy is almost bound to be twenty pounds heavier or twenty years older than he is in his photo....” To solve this problem Abrams developed Friendster so that people could link to friends and see their friends. “We’re trying to make the process more accountable,” he said. “People will put a more accurate picture of themselves on Friendster because you know your friends will see it.”⁴⁹ By 2003 Friendster had more than 3 million users.⁵⁰

The use of Friendster to create fake profiles became quickly popular. The “Fakesters” as they were called made up personas for themselves. According to Danah Boyd, “Fakesters were created for famous people, fictional characters, objects, places and locations, identity markers, concepts, animals, and communities.”⁵¹

Friendster’s management decided that Fakesters were not compatible with the “vibe” they wanted for the social networking site. According to Boyd, “Although most participants loved the playful aspect of Fakesters, it further complicated the network structure and created an appearance of unreliability, which irritated both the company and individuals intent on using Friendster for serious networking.”⁵² In addition, some of the Fakesters attracted massive traffic, which caused congestion on the site’s servers. Friendster’s owners decided to purge the Fakesters who consumed significant amounts of scarce server capacity in addition to creating noise.

The Fakesters organized themselves, however, and attempted to reinsert their profiles. They also sought revenge on Friendster by having “Fraudsters” masquerade as real people. Friendster’s growth slowed considerably as a result of its efforts to exclude people from the network.

⁴⁷ See Danah Boyd, *None of this is Real* in Joe Karaganis, eds, *Structures of Participation in Digital Culture* 132, 133 (SSRC 2007).

⁴⁸ See *Finding Love Online*, Version 2.0, Bloomberg Businessweek (Jun. 10, 2003), online at http://www.businessweek.com/technology/content/jun2003/tc20030610_4294_PG2_tc104.htm (last visited Aug. 1, 2011).

⁴⁹ See Julia Angwin, *Stealing MySpace: The Battle to Control the Most Popular Website in America*, 50 (Random House 2009).

⁵⁰ See *A Cautionary Tale*, Fast Company (May 1, 2007), online at http://www.fastcompany.com/magazine/115/open_features-hacker-dropout-ceo-cautionary-tale.html (last visited Aug. 1, 2011).

⁵¹ See Danah Boyd, *None of this is Real* in Joe Karaganis, eds, *Structures of Participation in Digital Culture* 132, 148 (SSRC 2007).

⁵² See Danah Boyd, *None of this is Real* in Joe Karaganis, eds, *Structures of Participation in Digital Culture* 132, 150 (SSRC 2007).

MySpace opened in late 2003. Its founders thought that Friendster was making a mistake in preventing people from having fake identities. It quickly attracted people who were being deleted from Friendster. One was Tila Tequila, a Vietnamese model, whose real surname was Nguyen and who attracted a larger following on Friendster in part by posting provocative photos of herself. Friendster deleted her account several times. She moved to the welcoming MySpace. Others followed. MySpace grew very quickly, overtook Friendster, and became one of the most heavily trafficked sites on the Internet for a period of time.⁵³

MySpace's laissez faire policy soon caused problems. With no restrictions or even a vibe that encouraged people to provide reliable information MySpace attracted child sex predators as well as minors who lied about their ages. The site also did little to discourage people from having user pages with "partial nudity, obscenity, crude sexual jokes, and other objectionable content."⁵⁴ MySpace gained a reputation as a "vortex of perversion"⁵⁵ and as a site that was not very safe—like a city's red light district.

Of course, as the popularity of the site attests, a large number of people liked the risqué nature of MySpace. One important part of the platform community did not. The principal source of revenue for MySpace came from advertisers. But companies did not want to risk having their brands displayed on pages with objectionable content. With limited interest from major brands in buying advertising inventory, MySpace moved its advertising inventory to other advertising networks, including Google's context-based advertising network. These networks inserted low-price ads automatically into space MySpace made available. Not surprisingly—given the content of the site, the low prices for the advertising inventory, and some of the people attracted to MySpace—a number of the ads that were displayed were also related to things that some people would find objectionable.

Facebook, which started in February 2004, took a different approach. Like Friendster it focused on creating a platform for people to manage their relationships with friends. But it required people to use their real identities. It initially limited access to the site to people with valid university email accounts ending in ".edu," starting with harvard.edu. It

⁵³ It was one of comScore's top fifty web properties in the US by April 2005. See Julia Angwin, *Stealing MySpace: The Battle to Control the Most Popular Website in America* 126 (Random House 2009).

⁵⁴ See Julia Angwin, *Stealing MySpace: The Battle to Control the Most Popular Website in America*, 181 (Random House 2009).

⁵⁵ See Felix Gillette, *The Rise and Inglorious Fall of MySpace*, Bloomberg Businessweek (Jun. 22, 2011, 11:01 PM), online at http://www.businessweek.com/magazine/content/11_27/b4235053917570_page_5.htm (last visited Aug. 1, 2011).

then expanded to selected groups including businesses with identifiable email addresses. When it opened to the world in September 2006 people it had 500 regional networks of people. Although this approach made it more difficult for people to use fake identities on Facebook it was still possible. Facebook, like Friendster, deletes the pages with fake identities that violate its terms of service. For example, in 2007 it deleted the pages that people had set up to represent brands that were not allowed at the time.⁵⁶

Facebook has taken active steps to limit negative externalities on its site that would limit its appeal to people and to advertisers who are considering inserting messages on its pages. Its terms of service prohibit various actions including bullying, intimidating, or harassing any user, posting content that is hateful, threatening, or pornographic, incites violence, or contains nudity or graphic or gratuitous violence.⁵⁷ As of April 2009, 150 (18 percent) of the company's 850 employees focused on policing the website for offensive content.⁵⁸ They would delete photos such as a "girl blowing an epic cloud of pot smoke" that violated the social norms the company wanted to promote.⁵⁹ According to an April 2009 account,⁶⁰

At Facebook, the range of policed activity is broad. A division called User Operations looks at all content that users say is harassing (via "report this" links spread liberally throughout the site) or that shows drugs, nudity or pornography. It also maintains an extensive "blacklist" of forbidden names that cannot be used to make new profiles, like Batman. Some of this monitoring is quite small beer: you're not allowed to call someone a "jerk" on Facebook if someone reports it. Employees also vigorously enforce their "real-name culture"; they even disabled the actress Lindsay Lohan's account in December after discovering that she was on the site under an alias.

The treatment of negative externalities is only one feature that has influenced the relative fortunes of Friendster, MySpace, and Facebook. However, popular accounts of their downfalls tend to highlight the difficulty that Friendster had in dealing with the Fakester problem and the reputation that MySpace acquired for having a seedy and unsafe community

⁵⁶ See *Facebook Cleanses Pages of Supposed Fakesters*, Niall Kennedy's Weblog, online at <http://www.niallkennedy.com/blog/2007/12/facebook-pages-deletions.html> (last visited Aug. 1, 2011). Note, however, that Tila Tequila has a fan page (perhaps the name is no longer viewed as fake) but with decidedly less provocative pictures than she has on MySpace.

⁵⁷ See Facebook, Statement of Rights and Responsibilities (Apr. 26, 2011), online at <http://www.facebook.com/terms.php>.

⁵⁸ See Nick Summers, *Walking the Cyberbeat*, The Daily Beast (Apr. 30, 2009), online at <http://www.thedailybeast.com/newsweek/2009/04/30/walking-the-cyberbeat.html>.

⁵⁹ See Nick Summers, *Walking the Cyberbeat*, The Daily Beast (Apr. 30, 2009), online at <http://www.thedailybeast.com/newsweek/2009/04/30/walking-the-cyberbeat.html>.

⁶⁰ See Nick Summers, *Walking the Cyberbeat*, The Daily Beast (Apr. 30, 2009), online at <http://www.thedailybeast.com/newsweek/2009/04/30/walking-the-cyberbeat.html>.

MySpace was bought by News Corporation in 2005 for \$580 million and sold in June 2011 for \$35 million.⁶¹ Friendster was sold for \$26 million in 2009 and closed down its original site and deleted user profiles in 2011.⁶² Facebook displaced MySpace as the leading social network measured by users and page views in May 2008.⁶³ As of January 2011 Facebook was reported to have a \$50-\$100 billion market value.⁶⁴

One of the major business risks that Facebook faces—and a source of continuing controversy—concerns how much control it gives users over the dissemination of private data.⁶⁵ Users can face adverse effects from disclosure while other members of the Facebook platform, such as advertisers and application developers, benefit from greater access to data. Its governance rules concerning privacy-related negative externalities, and its choices relative to new competitors such as Google+, are likely to be important.⁶⁶

B. Stock Exchanges

Modern stock exchanges have detailed rules and regulations that are designed to ensure the integrity of their markets. As Cumming, Johan, and Li observe, “Stock exchanges around the world invest considerable manpower, technological effort and financial resources to curb market manipulation and to promote market efficiency and integrity.”⁶⁷ They

⁶¹ See Jessica E. Vascellaro, Emily Steel & Russell Adams, *News Corp. Sells Myspace for a Song*, *The Wall Street Journal* (Jun. 30, 2011), online at <http://online.wsj.com/article/SB10001424052702304584004576415932273770852.html>.

⁶² See Julianne Pepitone, *Friendster Plans To Nuke Its User Data*, *CNN Money* (Apr. 26, 2011, 2:48 PM), online at <http://money.cnn.com/2011/04/26/technology/friendster/index.htm>.

⁶³ See Caroline McCarthy, *Facebook Overtakes MySpace Globally*, *ZD Net* (Jun. 23, 2008, 9:13 AM), online at <http://www.zdnet.com/news/facebook-overtakes-myspace-globally/207724>.

⁶⁴ See Ari Levy and Brian Womack, *Facebook at \$50 Billion Looks More Like Tencent Than Google*, *Bloomberg* (Jan. 5, 2011, 11:01 PM), online at <http://www.bloomberg.com/news/2011-01-06/facebook-at-50-billion-valuation-is-looking-more-like-tencent-than-google.html>.

⁶⁵ For a litany of controversies surround Facebook see http://en.wikipedia.org/wiki/Criticism_of_Facebook

⁶⁶ There is perhaps no better antidote to professional prognostication than the history of social networks. Friendster was a highly praised internet business for much of 2003 before evolving into a famous case study of business mistakes. See Danah Boyd, *None of this is Real* in Joe Karaganis, eds, *Structures of Participation in Digital Culture* 132 (SSRC 2007); Mikolaj Jan Piskorski & Carin-Isabel Knoop, *Friendster (A)*, Harvard Business Publishing, (2007). MySpace was then lauded for its brilliant effort, in part based on its willingness to let anyone do anything on its site, in displacing Friendster. Commentators thought that it had “won” the race for dominance in social networking. See Marc Gunther, *News Corp. (hears) MySpace*, *CNNMoney* (Mar. 29, 2006), online at http://money.cnn.com/2006/03/28/technology/pluggedin_fortune/ (last visited Aug. 1, 2008). It remains to be seen whether Facebook will make the sorts of mistakes in balancing the interests of its community—in particular juggling negative and positive externalities that upended its predecessors or many other possible business mistakes that could reverse its growth.

⁶⁷ See Douglas Cumming, Sofia Johan & Dan Li, *Exchange trading rules and stock market*

impose rules concerning market manipulation—that is, doing things to artificially affect market signals such as disclosing false information or creating a false impression of trading activity. They also impose rules concerning insider trading—that is, using material non-public information. Nasdaq, for example, has detailed rules “regarding wash trades, pre-arranged trading, fictitious orders, giving up priority, churning, front running, and a variety of other types of practices.”⁶⁸ In addition to market manipulation rules exchanges have rules for business dealings among members including concerning payment and delivery.⁶⁹ Exchanges enforce these rules in a variety of ways including expelling members for violating them.

Unlike the other platforms considered in this article, the governance rules for stock exchanges do not entirely result from the voluntary decisions of these platforms to deal with negative externalities among platform users. While all platforms are required by law to have certain forms of regulation (such as selling illegal goods) modern exchanges are subject to extensive government laws and regulations. But early in their formation stock exchanges adopted rules on their own volition, as the history of the London Stock Exchange illustrates. A critical feature in the development of these exchanges was the ability to exclude users for bad behavior.

The securities market in London operated informally for a couple of hundred years.⁷⁰ Securities were traded bilaterally as far back at the 16th century. It was convenient for traders to have places to congregate. They initially did so at the Royal Exchange, where commodities were traded, and, after being ejected from there as a result of being too rowdy, aggregated themselves in some of the coffee houses, such as Jonathan’s Coffee House, in the nearby Exchange Alley.

One of the problems the traders faced was ensuring that exchange partners would honor agreements to complete buy and sale orders when they came due. The Barnards Act, passed in 1734, however, declared time-based bargains a form of gambling for which it was not possible to enforce contracts. As Michie observes, “It was thus left to the market participants themselves to create a code of conduct that enforced the conditions necessary for trade. Even without the legal impediments it was most likely that those who participated actively in the market would seek to find a solution to their own problems among themselves, without the use of either the law of the land or the government.” In the mid 18th century, several

liquidity, 99 J. FINAN. ECON. 651, 651 (2011).

⁶⁸ See Douglas Cumming, Sofia Johan & Dan Li, *Exchange Trading Rules and Stock Market Liquidity*, 99 J. FINAN. ECON. 651, 652 (2011).

⁶⁹ NYSE, NYSE Rules, online at <http://rules.nyse.com/nyse/> (last visited Aug. 1, 2011).

⁷⁰ This section is based on Ranald Michie, *The London Stock Exchange: A History*, (Oxford 1999).

groups of traders in financial instruments—including bankers and marine underwriters—organized themselves into exclusive associations in which members who violated the stated or unstated rules of the association could be ejected.

A group of stockbrokers, who had operated an informal market at Jonathan’s Coffee House, tried to do the same in 1761. According to one contemporary source,⁷¹

The gentlemen at this very period of time ... have taken it into their heads that some of the fraternity are not so good as themselves and have entered into an association to exclude them from J-----’s coffee-house.

They paid the coffee house for the right to use the premises exclusively for three hours a day. As required by that agreement, the master of the coffee house, a Mr. Feres, apparently ejected a Mr. Renoux who then sued for assault. According to the *London Chronicle* on June 9, 1762,⁷²

It being proved at the trial that the house had been a market (time out of mind) for buying and selling government securities, the Jury brought in their verdict for the plaintiff, with one shilling damage; by which means Jonathan’s Coffee-house is now a free and open market, and all combinations there destroyed.

A group of London stockbrokers had a different approach towards an exclusive trading society in 1772. They funded the construction of a new building, the Stock Exchange, for trading. Given the previous legal result they made admission open for a daily fee. By the late 1790s, with the growth in securities market the governing committee of the Stock Exchange found that they did not have enough power to enforce discipline and faced difficulties in funding the administration of the exchange. The owners of the Stock Exchange decided in January 1801 to convert the open exchange into a closed “subscription room” for which members paid an annual fee. The London Stock Exchange started on March 3, 1801.

The new exchange adopted regulations for conducting business. Michie finds that “adherence to these rules and regulations was monitored and adjudicated by a committee, including full-time administrative staff, and enforced by the threat of expulsion from the market.” Most of the regulations focused on creating trust among members, particularly involving payment and delivery. As a late 19th century treatise put it, “[The London Stock Exchange’s] main objects appear to be the easy and

⁷¹ See C. F. Smith, *The Early History of the London Stock Exchange*, 19 AMER. ECON. REV. 206, (1929) quoting T. Mortimer, *Every Man His Own Broker*, 7th ed., 1769, preface, p. viii.

⁷² See James Oldham, *Law Reporting in the London Newspapers, 1756-1786*, 31 AM. J. LEGAL HIST. 177, (1987).

expeditious transaction of business, and the enforcement of fair dealing among its members. To these ends ... a set of results formed for the admission and expulsion of members, and for the control of their conduct both between themselves and towards the public.”⁷³

The London Stock Exchange, however, was also concerned about limiting negative externalities that members could impose on each other through market manipulation or asymmetric information. Writing about events in 1943, Michie observes, “One of the main functions of the Stock Exchange was to ensure a level playing field for all its members in terms of equal access to information. Consequently, without any support from the government or the Bank of England, it tried to ensure that price-sensitive information, such as company results, were released simultaneously to all.” The exchange also “treated very seriously any matter of insider trading, whether accidental or deliberate.” In 1943, it expelled one member who received tips from a journalist on his stock recommendations. It also warned members about doing business with non-members who raised insider-trading concerns. At least at this time, the government had no interest in outlawing insider trading.⁷⁴

Stock exchanges, like other platforms, have incentives to deal with negative externalities among their members and to maintain the reputation of the exchange with the public. That does not necessarily mean that they have adopted the socially optimal governance structure. Governments, especially after the Great Depression, have imposed regulations on stock exchanges and also oversee the rules these exchanges adopt themselves.

There is a long-standing debate on the efficacy of government regulation that is beyond the scope of this article.⁷⁵ The analysis of governance mechanisms for multi-sided platforms indicates, however, that stock exchanges have incentives to adopt rules and regulations to maximize the value of the platform and to do so in part by mitigating negative externalities among their members. The analysis of government intervention in securities markets should consider whether the government could provide tools that would help private enforcement; whether there are aspects of private regulation that could be done more efficiently by the government; and whether there are deviations between private and public incentives for maximizing the value of the platform.

⁷³ See Rudolph Eyre Melsheimer & Walter Laurence, *The Law and Customs of the London stock exchange* 1 (Nabu 1879).

⁷⁴ See Randal Michie, *The London Stock Exchange: A History* 297 (Oxford 1999).

⁷⁵ For an important contribution to the literature see Rafael La Porta, R., Florencio Lopez-de-Silanes & Andrei Shleifer, *What works in securities laws?*, 61 J. FINANCE 1 (2006). They conclude from a study of securities markets in 49 countries that laws facilitating private enforcement through disclosure and liability rules benefit stock markets but that public enforcement do not.

C. Search Engines

J. C. Penney is an American department store chain that also sells online. In late 2010, and during the holiday shopping season, a user who typed in “dresses” would see the company listed first on the Google search results page. She would have seen J. C. Penney at or near the top of the list for everything from “skinny jeans” to “tablecloths” to “grommet top curtains.”⁷⁶ The company achieved the top spots as a result of a highly successful strategy its search engine optimization (SEO) consultant had developed. The consultant had inserted these and other terms for J. C. Penney products in thousands of web sites along with links back to www.jcpenney.com. The SEO consultant thereby fooled Google’s search algorithm into thinking that www.jcpenney.com was a better and more relevant website for those search terms than it really was.

The J. C. Penney strategy is an example of opportunistic behavior involving the manipulation of information by websites. It imposes costs on the user who engaged in the search and gets distorted information. Moreover, the use of the strategies to game the rankings degrades the value of search results generally since users have no way of knowing whether any particular search result is the result of a manipulated or unmanipulated ranking. J.C. Penney, like other companies, has financial incentives to engage in this opportunistic behavior. According to one study, the top spot in the search rankings gets more than a third of the clicks compared to about 17 percent for the second spot and 3 percent for the tenth spot.⁷⁷

When it found out about the department store’s strategy, Google imposed a penalty on the company. It manually reduced the search rankings for J.C. Penney for about 90 days.⁷⁸ As a result of the manual action J. C. Penney fell, to take one example, from the first to the 71st spot for “Samsonite carry on luggage.”⁷⁹ Given the low click rate after the 10th spot on the first page downgrading J.C. Penney to the 71st spot was almost the same as excluding it from that particular search query result altogether.

⁷⁶ See David Segal, *The Dirty Little Secrets of Search*, The New York Times (Feb. 12, 2011), online at <http://www.nytimes.com/2011/02/13/business/13search.html?pagewanted=all> (last visited Aug. 1, 2011).

⁷⁷ See Daniel Ruby, *The Value of Google Result Positioning*, Chitika Insights (May 25, 2010), online at <http://insights.chitika.com/2010/the-value-of-google-result-positioning/> (last visited Aug. 1, 2011).

⁷⁸ See David Segal, *The Dirty Little Secrets of Search*, The New York Times (Feb. 12, 2011), online at <http://www.nytimes.com/2011/02/13/business/13search.html?pagewanted=all> (last visited Aug. 1, 2011).

⁷⁹ See David Segal, *The Dirty Little Secrets of Search*, The New York Times (Feb. 12, 2011), online at <http://www.nytimes.com/2011/02/13/business/13search.html?pagewanted=all> (last visited Aug. 1, 2011).

Google has developed a sophisticated governance system for mitigating negative externalities for its platform community of users, websites, and advertisers.

The core of the Google platform is the search engine. The search engine identifies websites and collects various data on these sites. It then employs algorithms to rank the relevance of these websites to various queries that users enter when they are interested in looking for information on the web.⁸⁰ The websites typically benefit from higher visibility to relevant users and therefore have incentives to achieve higher rankings.

At this point Google faces some difficult tradeoffs. Given the vast amount of information on the web, Google benefits when a website invests in activities that make it easier for Google to determine that the website is relevant to users that are looking for something. The incentives of users, websites, and Google are aligned to a large extent. Users want the most relevant information in the least amount of time. Google wants to attract as many relevant viewers to its search-results pages (and away from competing channels for discovering information such as Bing, Amazon, and Facebook) because it makes its money by selling advertisers access to relevant viewers. Websites want to attract relevant users and therefore have incentives to design their sites to do so; to the extent they are pursuing that goal, their incentives are aligned with those of users and Google.

As we saw with J.C. Penney, however, websites also have purely opportunistic incentives to place higher on search results than other websites that are also relevant to those searchers. Moreover, some websites may benefit from the small number of clicks they may get from users who were not searching for them at all—the spammers’ strategy.

Google has developed guidelines that describe the “white hat” activities that it encourages websites to engage in and the “black hat” activities that it believes distort the information-value of results and therefore are banned.⁸¹ It provides recommendations to webmasters on good technical, design and content practices that will benefit website users and also help the website signal to the search algorithm that it is a high quality and relevant site. This is an example of trying to promote positive externalities.

Google also describes deceptive and manipulative practices that could result in Google imposing sanctions on the website. The basic principle is that websites are not supposed to do things that are designed to influence the search engine results as opposed to providing value to users.

⁸⁰ These algorithms rely heavily on user behavior to ensure that users see the results that are most likely to be relevant to their query. See Hal R. Varian, *Position Auctions*, 25 Int. J. Ind. Organ. 1163 (2007).

⁸¹ Google, Webmaster Tools Help, online at <http://www.google.com/support/webmasters> (last visited Aug. 1, 2011).

Google then identifies specific practices that websites are not supposed to do, including having hidden text or links, cloaking or sneaky redirects, loading pages with irrelevant keywords, having multiple pages with substantially the same content, and using doorway pages that are just created for search engines.⁸²

The list is not intended to be exhaustive, and Google makes it clear that it will take action for any effort to distort search results artificially.⁸³

These quality guidelines cover the most common forms of deceptive or manipulative behavior, but Google may respond negatively to other misleading practices not listed here (e.g. tricking users by registering misspellings of well-known websites). It's not safe to assume that just because a specific deceptive technique isn't included on this page, Google approves of it. Webmasters who spend their energies upholding the spirit of the basic principles will provide a much better user experience and subsequently enjoy better ranking than those who spend their time looking for loopholes they can exploit.

Google cannot disclose too much about how it detects violations because that would enable websites to game the system.⁸⁴

Google has a team that focuses on identifying websites that are trying to game the system and taking various actions against these websites. It appears that Google has adopted a governance system that balances the value of providing users access to websites, ensuring the accuracy of the rankings, and deterring websites from gaming the system.⁸⁵ In some cases websites appear to be subjected to manual actions that reduce their rankings for some period of time.⁸⁶ In other cases websites are subjected to manual actions that reduce their rankings until they apply for reconsideration. That seems to have been the case for J.C. Penney, which contacted Google to sort through the problem. In other cases websites are delisted altogether

⁸² According to Google, "Doorway pages are typically large sets of poor-quality pages where each page is optimized for a specific keyword or phrase. In many cases, doorway pages are written to rank for a particular phrase and then funnel users to a single destination." See <http://www.google.com/support/webmasters/bin/answer.py?answer=66355>

⁸³ See Google, Webmaster Tools Help, online at <http://www.google.com/support/webmasters> (last visited Aug. 1, 2011).

⁸⁴ The New York Times quotes the editor of the SearchEngineLand blog, that covers the search industry, "'Google is just cagey about everything.' That, he said, is because the company is perpetually worried that the more it reveals about the vaunted mathematical algorithm it uses to drive search results, the more people will try to game it." David Segal, "A Bully Finds a Pulpit on the Web," *The New York Times*, November 26, 2010. A spammers forum, www.blackhatworld.com, even provides tips for gaming the rules.

⁸⁵ For further discussions of practices that Google has attacked, see Barry Schwartz, *Google Vows Renewed Look At Cloaking in 2011*, SearchEngineLand (December 28, 2010), online at <http://searchengineland.com/google-vows-to-look-at-deceptive-cloaking-techniques-59802> (last visited on August 22, 2011).

⁸⁶ See *What a Google Penalty Looks Like*, Mitch Fournier (Jul. 21, 2011), online at <http://mitchfournier.com/2011/07/21/what-a-google-penalty-looks-like/> (last visited Aug. 1, 2011).

although they have the possibility of applying for reconsideration. For example, BMW.de was delisted in 2006 for using doorway pages.⁸⁷

Google's manual process involves the use of algorithms to detect possible violations as well as human decisions on how to respond and whether to reconsider. As the web has expanded it is not feasible for Google to rely mainly on this process to ensure the quality of website rankings and the mitigate externalities. There were more than 350 million websites as of June 2011 and about 150,000 new websites were appearing each day.⁸⁸ Consequently, Google modifies its search algorithm frequently both to improve its performance and to counter efforts to game the algorithm. Changes in the algorithm result in changes in rankings and in some cases material changes. For example, a major change in February 2011 affected the quality score of 11.8 percent of the queries the Google receives.⁸⁹ As a cross check on the changes to the algorithm Google examined the relationship between the websites that were affected by the changes in the algorithm and the websites that Chrome browser uses had added to their block lists; of several dozen most-blocked domains the algorithm changes addressed 84 percent of them.⁹⁰

Changes in the algorithm are, in the short run, a zero-sum game for websites overall. Some websites rise in the rankings while others fall. Those that rise in the rankings quietly celebrate while some of those who fall complain loudly. Those who complain do not necessarily have sound grounds. Some of these websites are losing rankings because they have tried to game the algorithm and are just suffering the consequences of Google catching up to them. Others are collateral damage from the attempts by some websites to artificially inflate their rankings. In dealing with these attempts Google is forced to repeatedly change its algorithm in ways that may create uncertainty even for websites that are at least trying to play by the rules.

⁸⁷ See Tom Espiner, *Google Blacklists BMW.de*, Cnet News (Feb. 6, 2006, 6:58 AM), online at http://news.cnet.com/Google-blacklists-BMW.de/2100-1024_3-6035412.html?tag=contentMain;contentBody;1n (last visited Aug. 1, 2011).

⁸⁸ See Julie O'Dell, *How Big Is The Web & How Fast Is It Growing?*, Mashable (Jun. 19, 2011), online at <http://mashable.com/2011/06/19/how-many-websites/#17199How-Big-Is-the-Web> (last visited Aug. 1, 2011).

⁸⁹ See *The Official Google Blog*, Google (Feb. 24, 2011, 6:50 PM), online at <http://googleblog.blogspot.com/2011/02/finding-more-high-quality-sites-in.html> (last visited Aug. 1, 2011).

⁹⁰ The changes in part increased the detection of "scraper sites" and "content farms" that present shallow or low quality content by, for example, simply copying snippets from websites that present the original content. See Danny Sullivan, *Google Forecloses On Content Farms with "Panda" Algorithm Update*, SearchEngineLand (February 24, 2011), online at <http://searchengineland.com/google-forecloses-on-content-farms-with-farmer-algorithm-update-66071> (last visited August 22, 2011).

Google's efforts to deal with negative externalities generated by websites rest entirely on its ability to exercise property rights over the platform. By delisting websites it can preserve the quality of its rankings as well as providing a very significant disincentive to websites engaging in repeated attempts to game the system. By manually reducing website rankings it can achieve almost the same result since there is a low value to being listed far down in the rankings. And finally, by being able to change its algorithm, Google has a scalable approach for mitigating negative externalities on a massively large and exponentially expanding platform. The upshot is that, over the longer run, the short run zero-sum game becomes a significant positive-sum gain for the platform, its users, and also for websites, who benefit from the enhanced quality signals the platform – here Google—is able to provide.

Google's changes in rankings have resulted in some controversy. Several companies have filed antitrust suits against Google for allegedly engaging in exclusionary practices or have encouraged governments to initiate antitrust investigations.⁹¹ There have also been calls for government search neutrality regulation⁹² under which search engines like Google would face legal constraints on adjusting results or penalizing websites. This topic is addressed further in the next section, which looks at the distinction between efforts to use exclusion to police negative externalities and the anticompetitive use of exclusionary practices.

⁹¹ See *KinderStart.com, LLC v. Google, Inc.* (“KinderStart”), 2007 WL 831806 (N. D. Cal.); *Leo Cendrowicz, Carl E. Person v. Google Inc.*, Case No. 06-7297 JF (RS), 2007 (N. D. Cal); *Google Inc. v. MyTriggers.com, Inc.*, Case No. 09 CV 14836, (Franklin County Ct. 2010); *TradeComet.com LLC v. Google, Inc.*, 09 CIV 1400 (SDNY 2009); *The E.U. Probe: Is Google Rigging Its Search Results?*, Time (December 2, 2010), online at <http://www.time.com/time/business/article/0,8599,2034138,00.html> (last visited August 23, 2011); *Companies Ask EU Commission to Step in on Google Search Ranking Complaint*, ITProPortal (February 24, 2010), online at <http://www.itproportal.com/2010/02/24/companies-ask-eu-commission-step-google-search-ranking-complaint/> (last visited Aug. 23, 2011); Claire Cain Miller, *Texas Probes Google on Ranking of Search Results*, The New York Times (September 3, 2010), online at <http://www.nytimes.com/2010/09/04/technology/04google.html?adxnnl=1&adxnnlx=1314113487-4SfkO0V/SuFxFNfcRMdHkbQ> (last visited August 23, 2011); *Kinderstart Sues Google Over Lower Page Ranking*, USA Today (March 19, 2006), online at http://www.usatoday.com/tech/news/2006-03-19-google-kinderstart_x.htm (last visited August 23, 2011); Miguel Helft, *Lawsuit Says Google Was Unfair to Rival Site* (February 17, 2009), online at <http://www.nytimes.com/2009/02/18/technology/internet/18google.html> (last visited August 22, 2011).

⁹² See Adam Raff, *Search, But You May Not Find*, The New York Times (Dec. 27, 2009), online at <http://www.nytimes.com/2009/12/28/opinion/28raff.html> (last visited Aug. 1, 2011). The author is the founder of a company that complained to the European Commission that Google's penalties for his site, Foundem, violated the EU's competition laws. Also see James Grimmelman, *Some Skepticism About Search Neutrality* in Adam Marcus, Berin Szoka, eds, *The Next Digital Decade: Essays on the Future of the Internet*, 435 (TechFreedom 2010).

D. Software Platforms

Software platforms provide software code that developers⁹³ can use to build applications that run on that platform. Users of the platform then have access to these applications. There are positive feedback effects. A platform that has more users provides developers with a larger market while a platform that has more applications provides greater value to users. Software platforms underlie a number of multi-sided platform businesses. In some cases the software platform is a pure play in the sense that users and developers constitute the two primary sides. That is the case with Microsoft Windows for personal computers and the Sony PlayStation platform for video games. In other cases the software platform is part of a mixed platform strategy in which the application side is added to a platform based on other sides. That is the case with Facebook, which comprises primarily a communication platform, an advertising platform, and a software platform. Software platforms are often parts or more complex platforms that include hardware, as is the case with the mobile devices and video game consoles.

Negative externalities may arise for software platforms primarily as a result of a possible lemons problem. As in any market, it is possible that platform users will purchase applications that do not meet their expectation and that they would not have purchased had they had *ex ante* the knowledge they possessed *ex post*. The more serious problem is that consumers will lower their expectations concerning the quality of applications as a result of the proliferation of disappointing applications. That reduces the incentives of developers to invest in high quality applications. The bad applications therefore drive out the good applications.

The decision by videogame console makers to move from open to closed platforms has been attributed to the lemons problem. According to Boudreau and Hagiu,⁹⁴

In 1983, the videogame market in the United States collapsed, leading to bankruptcy for more than 90% of game developers, as well as Atari, manufacturer of the dominant game console at the time. The main reason was a “lemons” market failure: because it had not developed technology for locking out unauthorized games, Atari was unable to prevent the entry of opportunistic

⁹³ Following the usual discussion of software platforms we refer to the “developers” who write applications. In fact, there are often entrepreneurs who develop a business idea for a software application for a platform. These entrepreneurs may write the code themselves or they may hire developers.

⁹⁴ For a discussion see Kevin J. Boudreau & Andrei Hagiu, *Platforms Rules: Multi-Sided Platforms as Regulators* in Annabelle Gawer, ed., *Platforms, Markets, and Innovation*, 163-189, 163 (Imperial College Business School 2009).

developers, who flooded the market with poor quality games.

After this debacle the video game console industry move to closed platforms. This reflected a change in business model in addition to a mechanism for dealing with quality. Before 1983, Atari and other video game console makers made money by selling their video game consoles, which would presumably be more valuable if there were more games. After 1983, most video game console makers required game developers to enter into contracts to use the video game console platform. That enabled them to charge video game makers and to impose quality standards. For example, Microsoft Xbox requires game developers to have a contract with it and has an approval process for games.⁹⁵

V. THE ROLE OF THE GOVERNMENT IN THE REGULATION OF BAD BEHAVIOR ON PLATFORMS

Governments have developed extensive responses to bad behavior by members of the community. Criminal law and the police powers of the state deal with various actions by members of society that harm others. Practices from fraud to insider trading to murder are prohibited. Common law helps regulate negative externalities among agents by enforcing property rights and contract rights, and providing incentives to exercise care. Law and economics scholars have argued that much of criminal and common law can be interpreted as a rational attempt to maximize social welfare.⁹⁶ Over time governments have adopted regulations and laws to deal with various actions that were not (sufficiently) addressed by common law. These range from the regulation of pollution, to lemon laws for the sale of used automobiles, to laws against cyber harassment. Many of these laws and regulations have been rationalized along the lines of modern welfare economics as solutions to market failures.⁹⁷

The governance mechanisms for private multi-sided platforms mirror many of these laws and regulations. These platforms have developed rules and enforcement mechanisms for dealing with negative externalities created by agents on their platforms. These range from efforts

⁹⁵ See *Developing Games for Xbox*, Xbox, online at <http://www.xbox.com/en-US/developers/xbox360/> (last visited Aug. 1, 2011).

⁹⁶ See Richard A. Posner, 4 ed., *Economic Analysis of Law* 375 - 380 (Little, Brown and Company 1992).

⁹⁷ See W. Kip Viscusi, Joseph E. Harrington, Jr. & John M. Vernon, 4 ed., *Economics of Regulation and Antitrust* (MIT 2005).

to keep the platforms safe from sexual predators, cyber harassment including hate speech, pornography, the under-provision of information including lemons problems, market manipulation, fraud and misrepresentation, and opportunistic distortion of information.

These efforts likely provide enormous social value, since some of these platforms would provide significantly poorer service and perhaps not even be viable in the absence of efforts to control negative externalities. For example, as of the middle of 2011 there were more than 750 million Facebook users who spend 11.7 billion hours a month on the site and presumably value doing so rather than spending their time on a number of other alternatives.⁹⁸ This platform has been successful at least in part because it provided a safer place than competing social networks did.

The governance of negative externalities by multi-sided platforms nevertheless raises two public policy issues—anticompetitive exclusion and the role of public versus private regulation. Both issues result from the exercise of bouncer's rights to enforce rules to mitigate putative negative externalities. We already saw that the English courts prohibited the traders who rented the premises of Jonathan's Coffee House from excluding other traders. However, the issue is likely to have increased prominence as a result of several multi-sided platforms having created highly successful global businesses. These include Apple, eBay, Facebook, Google, Microsoft, NYSE/Euronext, and Visa.

A. Negative Externalities and Anticompetitive Exclusion

When a firm, especially one with significant market power, excludes another firm from the market its actions may be subject to scrutiny under the antitrust laws.⁹⁹ In the United States exclusionary practices could be a violation of Section 2 of the Sherman Act, which prohibits attempts to create or maintain a monopoly, or in certain circumstances Section 1, which prohibits unreasonable agreements in restraint of trade. In the European Union exclusionary practices could be considered abuses of dominance under the Article 102 TFEU.

As antitrust has adopted a more economics-based approach some aspects of exclusionary abuse claims have been viewed as problematic or at least controversial.¹⁰⁰ The U.S. courts have expressed skepticism over

⁹⁸ See Facebook, Statistics, online at <http://www.facebook.com/press/info.php?statistics> (last visited Aug. 1, 2011).

⁹⁹ See Einer Elhauge and Damien Geradin, ed. 2, *Global Antitrust Law and Economics* (Foundation 2011).

¹⁰⁰ The U.S. courts in particular have been influenced by the findings of economists that firms engage in vertical foreclosure practices for procompetitive reasons. See *Leegin Creative Leather Products, Inc v. PSKS, Inc.*, 551 U.S. 877 (2007); AMICUS CURIAE Brief of Economists in Support

vertical restraint cases¹⁰¹ and monopoly leveraging.¹⁰² They have generally rejected claims premised on the exclusion of a competitor from access to property owned by the defendant.¹⁰³ The U.S. courts have also expressed skepticism over claims involving the exclusion of direct competitors such as those that stem from the improvement of a product.¹⁰⁴ In fact, they have raised the bar for some practices sufficiently high that they are effectively (if not literally) *per se* legal under the rule of reason; for example it is extremely difficult for a plaintiff to establish that a rival that has “priced low” has engaged in predatory pricing.¹⁰⁵

The European Union has also made some moves in this direction. The Commission guidelines on enforcement priorities for Article 82 (now Article 102 TFEU) recognizes that vertical and horizontal exclusionary practices should be subject to the rule of reason and that depending on the factual circumstances a firm with significant market power may not have the ability or incentives to foreclose a rival.¹⁰⁶ The European Union continues to mandate access to essential facilities but imposes a significant burden of persuasion on the parties demanding access.

Nevertheless, it is possible that firms with significant market power may engage in anticompetitive exclusion. The question addressed here is how the exclusionary conduct cases that result from the imposition of penalties under established multi-sided platform governance systems on firms should be handled.

A platform could invoke negative externalities in excluding a possible rival from access to its platform. If it does not have a governance system in operation, and exclusion of the competitor is based on an idiosyncratic decision rather than a systematic process for dealing with negative externalities, there is no reason, based on the analysis above, to

of Petitioner, *Leegin Creative Leather Products, Inc. v. PSKS, Inc.*, 551 U.S. 877 (2007), (No. 06-480).

¹⁰¹ Herbert Hovenkamp & Phillip E. Areeda, *Fundamentals of Antitrust Law*, 3 ed. (Aspen 2004); Einer Elhauge and Damien Geradin, ed. 2, *Global Antitrust Law and Economics* (Foundation 2011).

¹⁰² Herbert Hovenkamp & Phillip E. Areeda, *Fundamentals of Antitrust Law*, 3 ed., (Aspen 2004); Elhauge and Einer Elhauge and Damien Geradin, ed. 2, *Global Antitrust Law and Economics*, (Foundation 2011).

¹⁰³ See *Verizon Communications Inc. v. Law Offices of Curtis v. Trinko, LLP*, 540 U.S. 398 (2003).

¹⁰⁴ See *Allied Orthopedic Appliances Inc., v. Tyco Health Care Group LP*, 592 F.3d 991, (9th Cir. 2010).

¹⁰⁵ Mark S. Popofsky, *Defining Exclusionary Conduct: Section 2, The Rule of Reason, and the Unifying Principle Underlying Antitrust Rules*, 73 ANTITRUST L. J. 435 (2006).

¹⁰⁶ See, Guidance on its enforcement priorities in applying Article 82 (EC) to abusive exclusionary conduct by dominant undertaking, European Commission Competition (Mar. 2008), online at <http://ec.europa.eu/competition/antitrust/art82/index.html> (last visited Aug 1, 2011). Also see Steven C. Sunshine, *Vertical Merger Enforcement Policy*, U.S Dept. of Justice (Apr. 5. 1995), online at <http://www.justice.gov/atr/public/speeches/2215.pdf>.

evaluate the conduct differently than other exclusionary conduct allegations. The court should take the efficiency explanation offered by the defendant on board in weighing the pro-competitive and anticompetitive aspects of the practice, or in applying the otherwise applicable legal framework.¹⁰⁷ Absent strong evidence that the business justification is without basis and that the harm to competition in the market as a whole is serious, the courts have recognized that even dominant firms should be given significant leeway in the manner in which they choose to compete.¹⁰⁸

It is now widely accepted that antitrust rules should take into account the costs and likelihood of making mistakes.¹⁰⁹ Rules that tend to absolve firms that have engaged in anticompetitive practices can encourage more firms to engage in these practices. Rules that tend to condemn firms for engaging in practices that are pro-competitive can deter firms from advancing social welfare.

That balance between false positives and false negatives is especially critical when the challenged action of the platform is taken pursuant to a pre-existing governance system. The fact that a firm is a platform and has a governance system for dealing with negative externalities provides a strong presumption that the firm is increasing social welfare by policing bad behavior pursuant to that governance system on its platform. That is likely to be an extremely valuable service to the consumers on the various sides of the platform. The ability to exclude those who create negative externalities is critical to the functioning of that governance system and ultimately for the overall value of the platform.

Of course, it is possible that a platform has established or structured a governance system as a pretext for excluding competitors. A platform could establish rules that prohibit, at least under some circumstances, participants from relying on, or interconnecting, with other platforms. Prior to its break-up, for example, AT&T provided local and long-distance telephone service under public utility rate regulation and had an unregulated equipment manufacturer. It established rules concerning the interconnection of equipment and other services to its networks that it claimed were designed to ensure the integrity of the telephone system. It has been argued, at least, that it sometimes applied these rules to exclude competing equipment manufacturers and competing long-distance telephone service

¹⁰⁷ See, for example, the five part test in *U.S. v. Microsoft*, 253 F.3d 34 (D.C. Cir. 2001).

¹⁰⁸ Compare *U.S. v. Microsoft*, 253 F.3d 34 (D.C. Cir. 2001) with *Allied Orthopedic Appliances Inc., v. Tyco Health Care Group LP*, 592 F.3d 991, (9th Cir. 2010).

¹⁰⁹ See Einer Elhauge and Damien Geradin, *Global Antitrust Law and Economics*, (2nd ed. 2011); Herbert Hovenkamp & Phillip E. Areeda, *Fundamentals of Antitrust Law*, 3 ed., (Aspen 2004); Einer Elhauge & Damien Geradin, ed. 2, *Global Antitrust Law and Economics*, (Foundation 2011). David S. Evans, *Why Different Jurisdictions Do Not (and Should Not) Adopt the Same Antitrust Rules*, 10 CHI. J. INTL. L. 161 (2009); Frederick Beckner III & Steven C. Salop, *Decision Theory and Antitrust Rules*, 67 ANTITRUST L. J. 41 (1999 – 2000).

providers in violation of the antitrust laws.¹¹⁰ To settle an antitrust case brought by the U.S. Department of Justice, AT&T agreed to divest its local operating companies and its equipment manufacturer.¹¹¹ Therefore, the existence of a governance system should not, by itself, preclude a finding of anticompetitive exclusion.

Nevertheless, the existence of the governance system increases the likelihood that the practice that results in exclusion is, in fact, pro-competitive. Governance systems are common among platforms, are clearly necessary for dealing with negative externalities, and can increase consumer welfare. To the extent there are serious negative externality problems on the platform there is a high cost to false positive decisions. That is, antitrust decisions that prohibit firms from engaging in exclusion, when that exclusion is pro-consumer and/or pro-competitive, would impose significant costs on the platform at issue, because the platform will be forced to weaken its enforcement mechanisms. Moreover, other platforms will recognize the risks they take from using exclusion to police negative externalities and weaken their government systems to the overall detriment of platform customers.

The 1762 decision concerning Jonathan's Coffee House illustrates the dangers of limiting the ability of private platforms to exercise bouncer's rights to regulate their platforms. That decision deterred the emergence of a stock exchange in England for a decade. When a stock exchange was created it had to adopt ineffective methods for dealing with negative externalities among members as a result of the court ruling. It was not until 40 years after the decision that England had a stock exchange that could effectively regulate bad behavior among members. The error-cost analysis of governance systems indicates that the standard rule of reason approach should be modified in the same way, and for similar reasons, as that approach has been modified for other practices that are likely to be pro-competitive.¹¹² There should be a presumption that exclusion that results from an established governance system for dealing with negative externalities is pro-competitive. The plaintiff should bear the burden of persuasion of showing otherwise.

We assume the plaintiff has already met the usual burden of establishing a relevant market and, as applicable, the potential for the

¹¹⁰ See Tim Wu, *The Master Switch: The Rise and Fall of Information Empires*, (Alfred A. Knopf 2010).

¹¹¹ *United States of America v. Western Electric Company, Incorporated, and American Telephone and Telegraph Company*, CV 82-0192, (1982, D.D.C).

¹¹² See David S. Evans and A. Jorge Padilla, *Designing Antitrust Rules for Assessing Unilateral Practices: A Neo-Chicago Approach*, 72 U. CHI. L. REV 73 (2005). In this article I am focusing only on how existing antitrust rules should be modified given the existence of platform-based governance systems for dealing with negative externalities. I do not address whether existing rules are sound.

challenged practice to raise price or restrict output. In the first step of the analysis, in defending against the complainant's prima facie case, the platform should have the opportunity to demonstrate that it has established a governance system for dealing with negative externalities and that the practice at issue results from the exercise of that governance system. If the platform cannot do so, standard antitrust rules applicable to the practice at issue should apply (see step three). If the platform can do so, the analysis should move to the second step.

The second step should consider whether the exclusion is inconsistent with the use of the governance system to deal with negative externalities or whether the governance system itself has been established as a pretext for excluding competitors. The plaintiff should bear the burden of demonstrating that the invocation by the defendant of the governance system is not reasonably related to enforcement of the goals the governance mechanism is designed to achieve. The plaintiff may be able to show that the platform has applied the rules differentially—excluding a competitor when it would not have ordinarily excluded the firm that allegedly violated the rules—or has created a separate class of offenses that really just results in the exclusion of competitors. The plaintiff may also be able to show that the governance system is unrelated to the correction of negative externalities or established as a pretext for exclusion. The plaintiff's claim should be rejected unless it can demonstrate that the practice is inconsistent with the mitigation of negative externalities. Otherwise the analysis should proceed to the third step.

The third step, which would be arrived at if the defendant fails the first step or the plaintiff succeeds in the second step, would follow the standard antitrust analysis applicable to the challenged conduct at issue. In the United States that would involve analyzing whether the practice (i) forecloses or raises rivals' costs in a manner that enhances the defendant's ability to raise price or restrict market output to the detriment of consumers and then (ii) weighing the anti-competitive and pro-competitive effects to determine whether the practice is, on net, anticompetitive. Under many circumstances, a successful showing by the complainant under step two would demonstrative the lack of pro-competitive effects.

As with any error-cost based approach this three-step analysis cannot eliminate false positives and false negatives. The plaintiff might succeed in showing that the application of an exclusionary penalty is a pretext even though it is a valid attempt to eliminate a negative externality. A defendant might succeed in showing that an exclusionary penalty is part of a pro-competitive governance system when in fact it is designed to exclude a competitor and harm consumers. Nevertheless, the approach likely minimizes the likelihood and costs of errors, in light of the role of

governance systems in reducing negative externalities that would otherwise harm consumers.

B. Private vs. Public Regulation

Another issue is whether private platforms should be running their own governance systems at all. Facebook, for example, is regulating social behavior for a community that has a population that is twice as large as the United States. Should Facebook be regulating the pictures that people show their friends or what they can say to each other?

This raises the tradeoff between the social control of businesses through public or private mechanisms when both are subject to imperfection.¹¹³ Public control is subject to a myriad of breakdowns in the political process that leads to the passage of laws, imperfections in the government institutions for social control including regulatory capture, and unintended consequences from what are often rigid methods of control mandated by law. Private control is subject to the problem that for-profit firms, including multi-sided platforms, do not necessarily have the incentives to maximize social welfare and may in fact have incentives to reduce social welfare, for example by exercising market power.¹¹⁴ As noted above, a platform could even adopt rules as a pretext to exclude competitors.

Multi-sided platforms do, however, have incentives to maximize the value of their platforms to the community. They may not necessarily achieve exactly the same maximum as a social planner would. But since they obtain their profits through the extraction of value from the platform they have strong incentives to increase platform value. They also have incentives to reduce negative externalities. The review of multi-sided platforms above shows that many platforms have, in fact, erected sophisticated governance mechanisms to do so. Given those incentives, regulators should be skeptical of claims that the outcome of a governance system decision in fact reflects an effort to limit competition by the platform's rivals rather than a legitimate effort to maintain or increase the value of the platform to its ecosystem.

Multi-sided platforms have several advantages over public regulators. They have more information on practices that may lead to negative externalities and the impact on the community. As private firms they can make decisions quickly on how to deal with negative externalities

¹¹³ See Simeon Djankov, Edward Glaeser, Rafael La Porta, Florencio Lopez-de-Silanes & Andrei Shleifer, *The New Comparative Economics*, 31 J. COMPAR. ECON. 595, 598 (2003).

¹¹⁴ See Alexander White & E. Glen Weyl, *Insulated Platform Competition*, NET Institute Working Paper No. 10-17 (2011).

and modify practices quickly especially if they observe unintended consequences. As mentioned earlier the platforms lack some of the investigative methods and penalties that a public enforcer would have. But they also face fewer constraints—for better or worse—since they are not subject to due process or administrative procedure requirements.

The issue of public versus private control has recently come up in proposals for search neutrality. The argument is that the government should prohibit search engines from “manipulating” search results and that all search results should be presented based on a governmentally determined notion of relevance. These proposals are, not surprisingly, being advanced by websites that have had changes in their rankings as a result of manual downgrading or algorithmic changes.¹¹⁵ Such prohibitions would limit the use of bouncer’s rights to penalize websites that are trying to game the system. They would also limit search engine innovations to improve algorithms, since anyone whose rankings change could claim that the algorithm has not changed neutrally, and government regulation could impose substantial social costs both by requiring potentially slow and expensive regulatory review and by making false-positive findings of “manipulation” based on differences in complex and potentially subjective judgments of “relevance.”¹¹⁶

VI. CONCLUSION

Multi-sided platforms have become particularly prominent since the start of the commercial web, although this business model has been around for millennia.¹¹⁷ The Internet and web technologies facilitate the creation of platforms—intermediaries—for different types of users that would benefit from getting together.¹¹⁸ As a result of scale economies and the ability to either replicate platforms across geographies, or to connect global communities, some of these platforms have become global players. These platforms are likely to attract increasing attention from policymakers because of their economic and social significance. Several already have.

An essential feature of these platforms is that they promote positive

¹¹⁵ See Adam Raff, *Search, But You May Not Find*, The New York Times (Dec. 27, 2009), online at <http://www.nytimes.com/2009/12/28/opinion/28raff.html> (last visited Aug. 1, 2011).

¹¹⁶ See James Grimmelmann, *Some Skepticism About Search Neutrality* in Adam Marcus, Berin Szoka, eds, *The Next Digital Decade: Essays on the Future of the Internet*, (TechFreedom, 2010).

¹¹⁷ See David S. Evans and Richard Schmalensee, *The Industrial Organization of Markets with Two-Sided Platforms*, 3 COMPETITION. POL’Y. INT’L 151, 152 (2007).

¹¹⁸ See David S. Evans & Richard Schmalensee, *Catalyst Code: The Strategies Behind the World’s Most Dynamic Companies* 5 (HBS 2007).

externalities between members of the community. But as with any community there are numerous opportunities for people and businesses to generate negative externalities that can reduce economic efficiency and, in the extreme, lead to the tragedy of the commons.

Most discussions of these platforms have focused on how multi-sided platforms create value by harnessing positive externalities and how positive network effects can result in the emergence of dominant platforms in particular categories. Much less attention has been given to the role these platforms play in mitigating negative externalities. As it turns out, many of these platforms have developed governance systems for dealing with bad behavior. These governance systems ultimately depend on the ability of the platform to exclude agents from some quantum of the platform including prohibiting them from the platform entirely.

Exercising these exclusionary rights results in controversy. The platform has to balance the interests of its multiple constituents. Rules concerning negative externalities, just as those involving positive ones, shift value between different sides. Like any polity, a platform must balance competing values, such as freedom of speech and protection from hate speech and other verbal harassment. The exercise of exclusionary rights to enforce rules also can lead to complaints by the excluded parties and in some cases lawsuits.

Generally, it is desirable from the standpoint of social welfare to have private multi-sided platforms deal with negative externalities. They can increase the value of their platforms to their communities by doing so, and facilitate growth, development, innovation and adoption of platforms that generate enormous consumer welfare. While neither private nor social control of bad behavior on platforms is likely to lead to the socially optimal result that an all-seeing and all-powerful planner could achieve, private control will often be superior to public control. The platform can identify problems more easily and can correct these problems with greater agility and is in a better position to minimize the unintended consequences of rules.

The fact that a platform is engaging in exclusion as part of a governance system for dealing with negative externalities has important implications for the antitrust analysis of exclusion. "Exclusion" of actors who diminish the value of the platform to all its constituents is prevalent, important, and beneficial. Antitrust analysis should therefore use exclusion based on a governance system for dealing with negative externalities as a screen for practices that are likely to be pro-competitive, and recognize that condemning the implementation of governance systems, as a general matter, is likely to create false positives. The three-step analysis proposed above would better balance the costs of false positives and false negatives in light of the common use of governance systems to mitigate negative externalities

and increase consumer welfare in platform communities.

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