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I. INTRODUCTION

At the core of the widely acknowledged economic and social benefits accruing from the internet are the internet search engines such as Bing, Google, and Yahoo!, among several others. These search engines act as intermediaries by providing timely and relevant information sought by internet users, and connect those users to suppliers of various products and services.

In the development and evolution of the internet information search industry, there have been marked increases in the number of search engines as well as churning, i.e., entry-exit and changes in their respective ranks. This is to be expected in new, dynamic, fast-changing and innovative industries, especially as the internet and related service providers are generally viewed as still being in the “infancy” stage of development. Without this dynamic competitive process (which the Austrian economist, Joseph Schumpeter termed “creative destruction”), there would be less or no technological change and progress. During any given time period, some firm(s) are likely to emerge as leader(s), while others may decline in their market position or exit. This process is especially characteristic of the internet search engine industry.

Google has emerged as a leading internet search engine in several countries. Various allegations of anticompetitive practices have prompted investigations by different competition authorities. In this regard, we note that most of the investigations are in response to complaints by rivals rather than consumers—contrary to a basic tenet of the objectives of competition law: To protect and promote the competitive process in order to maximize consumer welfare, but not to protect competitors.

In this connection, it is critical for any competition authority investigating alleged dominance and abuse of dominant market position to ascertain if a firm’s market position—such as Google’s—is a result of anticompetitive business practices in violation of competition law and, further, to establish whether there are appreciable adverse effects on consumers; namely, the principal users of the internet search engine. Equally, competition authorities need to ascertain if a firm’s alleged dominant market position stems from “superior competitive performance” over rivals. Finally, they must ensure that competitors are not misusing competition law to: (i) impose costs through unnecessary litigation, (ii) tarnish the leading firm’s reputation, and/or (iii) detract its management from better serving its customers.

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In absence of credible evidence of abusive exercise of “market power” in the case of Google (as against theoretical arguments), the spate of investigations into its alleged anticompetitive business practices poses high risks of competition authorities committing a “Type I error”—alleged violations of competition law that are likely based on a false premise (false positive) of misreading pro-competition business behavior as being anticompetitive. Type I errors adversely impact on legitimate competitive business strategy, raise costs, and have a chilling effect on innovation. In contrast, a “Type II error”—inadvertent failure by competition authorities to prevent anticompetitive business behavior—may have less serious repercussions. This is because market forces provide some corrective power for false negatives—even when one firm has a dominant position, there is still some level of competition to counteract monopolistic behavior.

No corrective force exists for Type 1 errors—regulatory fines are not determined by market forces but discretionally imposed by regulators. Furthermore, fear of false positives creates disincentives for investment in product improvement. This harms both consumers and the competitive process. Moreover, in dynamic, fast-changing, growing, and innovative markets, predicting future outcomes is very difficult. Hence, false positives are not only more damaging, but are more likely to occur—especially, as we point out below, because conventional approaches to defining the relevant market and establishing existence of market power are not easily applicable to two-sided markets such as the internet information search market. Indeed, one of the principal characteristics of such markets is that entry and growth of new or even existing firms is not necessarily path determined. There is disruptive change and today’s “leading” firms may be tomorrow’s “laggards”—unless they continue to invest and innovate.

In the ensuing discussion we briefly describe some of the complex economic features of the internet search market that need to be considered when assessing competition. We also briefly refer to some decided cases relating to Google, and note that—notwithstanding banner press headlines—in no jurisdiction has Google been charged with violating competition laws.

II. Growth and Structural Change in the Internet Search Engine Market²

As the following brief history indicates, Bing, Google, Yahoo!, and numerous other search engines have faced, can continue to face, vigorous competition against each other in the fast-evolving and innovative internet information search market.

Three computer science students at Montreal’s McGill University are reputed to have created the first internet (web) search engine—“Archie”—in 1990. It provided a searchable database of downloaded public directory listings. While exact data is not available, presently there exist more than 240 search engines. A time line between 1993 and 2012 suggests that the entry of new internet search engines on average ranges between one and seven new companies per year. During this time some entities have also exited or become inactive, while others have been acquired by existing internet search engines.

² The discussion draws on information contained in the following sites: www.thesearchenginelist.com; www.netforbeginners.about.com; www.en.wikipedia.org/wiki/List_of_search_engines; www.en.wikipedia.org/wiki/Web_sereach_engine; www.ask.com/question/how-many-search-engines-exist; and various links/articles therein.

Yahoo! established its first search engine (Go.com) in 1994. In 1998, both Google and Microsoft's MSN Search (later Bing) were established. Today, there are numerous general purpose search engines which includes Bing, Yahoo!, Google, Baidu, and others with picturesque names such as "DuckDuckGo," "Dogpile," and "Yippy." Among these search engines, there is a fair degree of differentiation in the search functions provided. For example, "The Internet Archive" allows travel back in time to see what given web pages historically looked like and the information provided; "Mahalo" claims to be "human powered" with a committee of editors that manually vet and sift thousands of pieces of information to provide "high quality" content; "Dogpile," which was originally deemed to be faster and more efficient than Google, is coming back with growing index of clean, quick presentation of content material and crosslinks; and "DuckDuckGo" aims at presenting Spartan search results with less advertisements, among other features.

These, as well as other search engines, have also diversified and/or entered into offering competing services beyond general search functions. There are, for example, several specialized vertical internet search engines focusing on different types of information, products, and services relating to travel, hotels, car rentals, restaurants, shopping, weather reports, accounting, legal, medical, real-estate, maps, etc. Although the main market contested by the general internet search engines is for the larger space of search queries and information, there are no obstacles confronting any of these others in diversifying and broadening their services. Facebook has already evolved beyond being just a social network to provide "Face Time" in competition with Skype, "Facebook Chat" in competition with various sites including "Google+", and work networks allowing for individuals and corporations to link in and advertise, among other features.

III. COMPETITION AND COMPETITIVE DYNAMICS IN INTERNET SEARCH MARKETS

A. "Zero Price," User Pool Size, and Two-Sided Market

Typically, search engines do not charge users for their service. This "zero price" feature enables them to develop a large pool of users. Users searching for specific products, services, and other information reveal what they are currently interested in—whether it is shopping for particular products and services, or for information related to a wide range of topics. This information is of significant value to advertisers as they can target and draw attention of internet users to their offerings, leading to a possible purchase of their product or service.

While the internet search engine is made available at a zero price to users, the costs of operating and constantly upgrading it are recovered from the fees advertisers pay for access to the user pool. Thus, the internet search engine is an intermediary or "platform" operating in a two-sided market that connects internet users on one side and advertisers on the other. It creates value for both sides. The larger the user pool, the more attractive it is to advertisers. The more advertising revenue earned, the more investments and improvements can be made in the internet search engine functions which, in turn, will attract more users.

B. Superior Competitive Performance

The size and growth of the user pool is not automatic. Internet search engines have to invest, constantly upgrade, and innovate if they are to maintain their market position. Google's

position, for example, is attributed to an innovative algorithm “PageRank” method created by the firm’s co-founders, along with a host of other complex innovative technologies such as incorporating language models that correct for spelling and grammar and personalized preferences based on past searches, among other algorithms. These algorithms are proprietary, highly confidential, and continuously updated. While some rivals expend higher amounts on R&D, Google recently ranked 2nd (after Apple) among “most innovative companies.”³

The opportunities for Yahoo!, Bing, and Google, among others, to innovate and challenge each other’s market position are only restricted by the caliber and imagination of their respective managers and staff. Yahoo! preceded Google in the internet search market by several years. In 2004, Yahoo and Google had comparable market positions, each with about 35 percent of total U.S. internet search queries. Google, mainly through investments; innovative algorithms; and faster, more efficient, and relevant search results increased its user base to account for about 66 percent of total U.S. internet search queries and had estimated higher shares in Europe, Brazil, and India, among other economies.

As indicated earlier, Google and MSN Search (Bing) were established in the same year. However, Bing, with currently about 17 percent and Yahoo with 12 percent of total U.S. search queries, and even less shares in other countries have, thus far, not been as effective as Google in attracting users. This is despite the fact that both Yahoo! and Bing had the same opportunities at the outset, certainly more financial and human resources, and better-recognized brand names. Being first or having greater financial and human resources does not guarantee sustainable leadership in the market.

C. Organic Search and Search-based Results and Advertising

In response to a search query, the internet user is presented with organic search results and relevant search-based advertising. The organic search results are generated through the search engines’ highly confidential proprietary information sorting processes and algorithms. The organic search results are weighted and ranked according to relevance. Sponsored links (or ads) are typically indicated.

Search-based advertising is based on certain keywords used by an internet user and is displayed alongside the organic search results. Search-based advertising is paid for through a system of auctions that may also specify a reserve price. Bids are submitted for certain keyword combinations. The revenue received by the search engine is from the auction and also from the number of “clicks” (visits) by the users to an advertiser’s website. In the latter case, the advertiser only pays when a user actually clicks on its ad. The closer the key-word combinations matches the advertiser’s business, the more valuable they are and higher bids are submitted in the auction. Thus there is significant competition between bidders for specific key-word combinations.

Of notable interest is that the winning bidder receives the advertising “slot” or space on the search engine’s website at the bid price submitted by the second highest bidder. In other words the winner pays less than what it was willing to pay. In economic parlance, the winner

³ See, *The 2013 Global Innovation Study: Navigating the Digital Future*, available at www.strategyand.pwc.com. The other top innovative companies were Samsung, Amazon, 3M, GE, IBM, Tesla, and Facebook. Microsoft ranked 7th.

enjoys “consumer surplus,” easily measured by the difference between its bid-price and the second highest bid-price. The second highest bidder, willing to accept a less prominent advertising slot, pays at the third highest bid-price, and so on—all enjoying consumer surpluses. Indeed, an auction represents an efficient and industry- standard method to allocate space on the search page and determine its objective value.

The forgoing practices have become the industry norm. All the major search engines hold continuous auctions whereby advertisers can change their bids frequently, and displace competitors. There are no “lock-in” provisions.

D. Network Effects, Economies of Scale, Switching Costs, and Market Concentration

The competitiveness of a given search engine is determined by a number of factors related to internal capabilities and to external market features. The internal capabilities relate to proprietary and innovative search algorithms, efficient technologies of learning from the results of cumulative searches, and constant upgrading to faster and larger servers. The external factors are “network effects,” which are derived, directly and indirectly, from the size and growth of users and advertisers. The size and growth of users also produce economies of scale and benefits from cumulated learning and experience.

These factors may collectively lead to increased concentration. However, these factors are essentially industry-specific characteristics or requirements of doing business in the internet search engine market. Both economic theory and actual business experience demonstrate that concentration in and of itself does not give rise to competition concerns. As the evolution of Google itself demonstrates, there is no first mover advantage. The search engine Yahoo!, which initially held that distinction, was followed by Altavista. Nor is a high market share position once attained by a search engine inevitably durable, as demonstrated by the displacement of Rambler by Yandex in Russia.

Standard competition analysis would also suggest that (i) unless searchers get locked in to a search engine (e.g., as the default engine initially installed by computer manufacturers) or (ii) that there are high switching costs (which we don’t view as true), credible entry into the search engine market is very feasible. This is evident by the proliferation of search engines noted earlier. Market realities are such that internet search engine users can switch search engines instantaneously at zero cost by clicking to the new engine’s site (if not previously downloaded, it can be done in minutes) or through an open www link. Users would certainly do this if Google’s search engine did not provide superior service.

IV. GAUGING COMPETITION AND MARKET POWER: *Defining the Relevant Market*

The starting point in conducting competition analysis is defining the relevant market. Briefly, the conventional approach adopted by competition authorities is to apply the SSNIP test (small but significant and non-transitory increase in price) to identify the smallest relevant (antitrust) market. They use this market to gauge whether a firm with alleged market power could profitably raise prices by 5 percent or more without customers switching to substitutable or interchangeable products/services. They also judge whether, in this defined market, existing competitors would face barriers that could prevent them from expanding supply or new firms

that could mitigate the price increase would be deterred from entering the defined market. If customers can shift to alternative products, current suppliers can expand, and new suppliers can easily enter the market, the incumbent firm is deemed not to have market power. The market would be considered as being contestable.

In the context of conducting competition assessments of the internet search market, it is critical that its two-sided nature be taken into account for the purpose of defining the relevant market. As mentioned above, in the case of internet search engines there are two groups of active users: searchers and advertisers. A proper approach requires analyzing these two sides together. The normal approach to delineating the market using a SSNIP test is not applicable where the prevailing price is zero, as it is for searchers.

In addition, there are other complexities. The information being sought by an internet user is essentially demand driven and can vary significantly across different internet users, even if they are searching for information broadly relating to the same area. For example, while two or more users may be seeking information on hotel accommodation in London, the specific queries may differ in terms of category, price, and dates (among other factors) such that the vendors/advertisers may not even be in the same market. The information provided in response to each query may be highly customized.

This applies to myriads of other types of information searchers seek. In other words, there is considerable heterogeneity on both the demand and supply sides of internet search markets. As indicated earlier, competition between search engines is in the form of both having superior search results and having a growing endowment of cumulated search results. There are no obvious reasons why search engines would not strive to provide higher quality results to search queries—especially given the wide choice of alternative search sites available.

There are number of other questions that must also be addressed: Do the general information search functions provided by Bing, Yahoo!, Google et al., constitute the relevant market? Does the relevant market include/exclude specialized vertical internet search engines; indeed, is the nature of competition between the general horizontal and specialized vertical search engines understood? How would this competition be gauged given these search functions are provided at zero prices? Are on-line and off-line advertising substitutable, or constitute separate markets? These and other questions have largely remained unresolved.

V. ALLEGED ANTICOMPETITIVE PRACTICES

Due to space restrictions, we synoptically discuss selected decided cases relating to alleged anticompetitive business practices by Google. At the outset it must be noted that in no jurisdiction has Google been charged with violating competition/antitrust law, although in some cases voluntary commitments have been made to address certain issues. There are, however, on-going investigations in several countries.

A. The FTC Investigation

Among the most extensive investigations conducted has been that by the United States Federal Trade Commission (“FTC”).⁴ The case focused primarily on alleged search bias and exclusivity restrictions on advertisers that prevented “multi-homing,” or limited portability of advertising campaign data to competing online advertising sites. Assessing direct and indirect measures of product/on-line advertising space substitutability appeared to have been the FTC’s main approach to defining the relevant market.

In general, the FTC determined that while not everything Google did was beneficial for other competitors, the evidence did not support challenges under U.S. antitrust laws. They concluded that the evidence showed it was unlikely Google could manipulate the advertising market and disadvantage competitors. The FTC reiterated that U.S. courts had consistently ruled that the basic tenet of antitrust law was protecting competition and not competitors.

Specifically, the FTC found the following:

- Many of the design changes were found to improve the search results and over-all user experience.
- While online advertising was viewed as being substantially different from off-line advertising such as radio, TV, and print media (newspapers, magazines, etc.), the FTC also stated that all on-line advertising did not constitute the relevant market. There was considerable heterogeneity in on-line advertising such that one type of advertising does not constrain the pricing of another.
- Current competition among competitors was deemed to be vigorous, and Google engaged in competition on its merits.
- The market for on-line advertising space continues to evolve quickly—and its future course is unpredictable.
- As to multi-homing, the FTC found that while most large advertisers were not affected as they preferred to multi-home. Small- to medium-sized firms were less commonly affected.

In 2014, after 19 months, and the examination of nine million documents and extensive interviews with various stakeholders, the FTC closed its investigation of Google’s search service without taking any action against Google. However a voluntary consent order was adopted as Google voluntarily agreed to drop restrictions on multi-homing.

⁴ For further information, see Statement of the Federal Trade Commission Regarding Google’s Search Practices, *In the Matter of Google Inc*’ FTC File Number 111-0163, available at <http://ftc.gov/os/2013/01/130103googlesearchstmtofcomm.pdf>; also see http://www.ftc.gov/sites/default/files/documents/public_statements/looking-back-moveforward-preserving-progressive-tradition-ftc/130124nysba.pdf; Google Press Conference: Opening Remarks of Federal Trade Commission Chairman John Leibowitz As Prepared for Delivery, January 3, 2013, available at www.ftc.gov/News&Events/Speeches.

B. Brazil: Buscape and Bondfaro

In 2012, Buscape and Bondfaro, two Brazilian shopping comparison sites, registered a complaint against Google asserting that Google had 95 percent of the on-line shopping market and manipulated its internet search results in favor of its competing service—Google Shopping. They alleged that searched merchandize was first ranked and displayed on Google Shopping, leading to demoted positions or exclusion of Buscape and Bondfaro. Also alleged was that Google “usurped” the database of client reviews and evaluations for purchases on its own sites, adversely affecting revenues of Buscape and Bondfaro and other associated sites.⁵

The Brazilian Court granted a summary judgment in favor of Google. Applying general legal principles rather than Brazil’s competition law, the Court was not persuaded by any of the plaintiffs’ arguments and ruled that:

- Google was not a monopoly as there are several search services at the disposal of consumers...looking for products and at the disposal of merchants...to attract consumers (i.e. Bing, Yahoo!, Ask).....
- Google Shopping is not a shopping comparison site...but one of the ‘thematic search options’ offered by Google search, and the ‘vertical’ results are not competitive products but choices made available by Google’s search results.
- Google ranks and displays search results that best fit its criteria of quality and relevance to meet users’ actual intentions on its algorithmic formula, which is in keeping with its profit corporate business.

C. Hamburg: OneBox

In a similar case as the Brazilian one, the District Court of Hamburg ruled summarily in favor of Google Inc. The plaintiff—a weather service, OneBox—alleged that Google-owned content was biased and displayed in the top spot above the list of organic search results. It maintained that users starting their query with the word “Wetter” (weather) should not have to search further as all the relevant information was contained in their site OneBox. They further claimed that due to a reduced number of visits to its site, the provider received less advertising revenue and, as a consequence, lower profits, which threatened its business model.

The Court ruled that it could not find that Google had “...engaged in unlawful conduct by abusing a position as a dominant market player or as a company with relative market power. Likewise, there is no misleading or otherwise unfair business conduct that would justify a prohibition.”⁶ Moreover the arguments of reduced visits, advertising revenue, and profitability were not sufficient to establish abusive exclusionary conduct. Also the argument that Google had relative market power was doubtful since there were “effective competitors... such as.....other search engines, some of which are vertical search engines.”⁷ In addition the Court mentioned that

⁵ The discussion draws extensively on the article by Greg Sterling, *Google Wins Major Antitrust Victory in Brazil: Does it Foreshadow Broader EU & US Wins?* (Sept. 10, 2012), available at <http://searchengineland.com/>.

⁶ *Id.* at 2.

⁷ *Id.*

companies—such as the plaintiff—operate their own websites independently to attract users and advertisers and were not wholly dependent on Google.

VI. CONCLUDING REMARKS

The internet search market is a dynamic, fast-changing, and innovative market characterized by vigorous competition among various internet search engine providers. The latter play a critical role in the diffusion of knowledge and information and in facilitating commercial transactions. These results, in turn, have led to marked increases in productivity, employment, investment, and the entry of new firms, as well as the creation of new industries, markets, and widespread economic growth—all of which have produced beneficial social, cultural and political changes.

Various allegations of anticompetitive practices have been levied against Google, which has emerged as the leading internet search engine. However, compared with its rivals, who had head starts, greater financial and human resources, and stronger brand names, Google's growth and prominence in the internet search market appears to be due to innovation and superior competitive performance, not illegal competitive practices.

It must be remembered that, when judging the internet search engine market, conventional approaches to defining and analyzing the relevant market and market power cannot be applied given the two-sided nature of the internet search market. Further, in investigating complaints of alleged anticompetitive practices in dynamic and innovative markets such as the internet search engine market, competition authorities face high risks of committing Type I errors of misinterpreting pro-competition business behavior as being anticompetitive. The resulting costs to the market and society can be high since litigation costs are high for both the competition authority and businesses, especially when compared to designing voluntary measures to address reasonable concerns. Finally, it must be emphasized that the fundamental tenet in the administration of competition law is to protect and promote the competitive process—not to safe guard competitors.