

Big data and Innovation: Implications for Competition Policy in Canada

Draft Discussion Paper

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I. Introduction

Prognosticators have been describing the promises and threats of big data for several years now. Under one view, algorithmic analysis of big data has the potential to become “a key basis of competition, underpinning new waves of productivity growth, innovation, and consumer surplus.”¹ Others have described it as a potentially serious threat to democracy² and even to the survival of the human race.³ Competition practitioners have also jumped into the debate with a similarly varied set of predictions. Some hold that big data offers substantial benefits to both individuals and businesses; others hold that it has the potential to undermine the competitive process.

This paper does not offer predictions about what the ultimate effect of big data on competition will be. However, it does recognize the role that competition policy can play in tipping the scales one way or the other. For example, an uninformed or overly interventionist enforcement approach risks chilling investment in the accumulation and use of big data through legitimate means, and losing out on significant benefits to competition and innovation. On the other hand, an approach that is too lax risks turning a blind eye to uses of big data that are harmful to competition and consumers. One goal of this discussion paper is to prompt discussion on how the Competition Bureau (Bureau) should strike a balance in enforcing the *Competition Act* (Act) in cases involving big data. To facilitate this discussion, the Bureau is soliciting public comments on its website. The Bureau plans to release a concise summary of important insights informed by these public comments in the near future.

The Bureau is mindful of two important contextual points.

First, the purpose of competition law in Canada is not to regulate prices, profits, market shares, or for that matter, the amount of data that companies gather and use. The Act starts from the assumption that reliance on competitive market forces is the best means of ensuring an innovative, efficient, and prosperous economy. Accordingly, the Bureau’s work focuses on these market forces (as opposed to market outcomes), thereby ensuring that companies compete on the merits, customers are able to make well-informed decisions, and regulations are minimally intrusive.

¹ McKinsey Global Institute. “Big data: The next frontier for innovation, competition, and productivity” Mckinsey.com. Available at <http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/big-data-the-next-frontier-for-innovation>

² Dirk Helbing, Bruno S. Frey, Gerd Gigerenzer, Ernst Hafen, Michael Hagner, Yvonne Hofstetter, Jeroen van den Hoven, Roberto V. Zicari, Andrej Zwitter. “Will Democracy Survive Big Data and Artificial Intelligence?” Scientificamerican.com. Available at <https://www.scientificamerican.com/article/will-democracy-survive-big-data-and-artificial-intelligence/>

³ Samuel Gibbs. “Elon Musk: artificial intelligence is our biggest existential threat” Theguardian.com. Available at <https://www.theguardian.com/technology/2014/oct/27/elon-musk-artificial-intelligence-ai-biggest-existential-threat>

This principle provides important guidance as competition in the big data era may lead firms with access to superior data or algorithms to grow at the expense of others, perhaps rapidly. Incumbents, finding their industries disrupted, may complain to the Bureau or other policy makers about what they view as unfair competition leading to populist calls to break up large big data players or to regulate their conduct. But competition policy in Canada does not, and should not, assume that “big is bad.” Companies that achieve a leading market position—even a dominant one—by virtue of their own investment, ingenuity, and competitive performance should not be penalized for doing so. Imposing a penalty for excellence removes the incentives to pursue excellence. However, where market power is attained through means other than investment, ingenuity, and competitive performance—such as anti-competitive practices, agreements, or mergers, which are all proscribed by the Act—the Bureau can and should investigate. Similarly, if big data is collected by deceiving consumers or used to deceive consumers, then the consumer protection provisions of the Act may be engaged. As such, a second goal of this discussion paper is to identify discrete areas where conduct related to big data could potentially fall under the Act.

The second important contextual point is that firms are increasingly harnessing big data in ways that drive innovation and quality improvements across a range of industries. Moreover, these advances are occurring rapidly and in unpredictable ways. For example, algorithms that use artificial intelligence to estimate predictive relationships perform better as they are “trained” on more data. Many industries can potentially benefit from those advances in diverse and perhaps even non-obvious ways. So long as those advances are deployed in competitive and non-deceptive environments, consumers will benefit. Given this promise, the Bureau is mindful, not only of the risks of “underenforcement” (i.e., not taking action where there is a genuine harm to competition), but also of the risks of “overenforcement” (i.e., taking action where there may be no genuine harm to competition), which risks slowing or even stopping such advances.

This leads to a final pragmatic question about whether the Bureau’s current analytical frameworks can be applied usefully to cases involving big data. This paper generally answers that question in the affirmative. From a high level, this conclusion should not be surprising because fundamental antitrust principles have been applied successfully to a very diverse array of goods and services—big data is no exception. That is not to say, however, that any competition analysis of big data will be straightforward. In fact, big data cases sometimes implicate facts and theories that are somewhat specialized and, thus, may be less familiar in competition law. And even when big data implicates familiar facts and theories, they can be manifested in ways that, superficially at least, may appear unfamiliar. Thus, a third goal of this paper is to describe some of these challenges of analysing big data cases under the Act and to spark discussion with stakeholders on how they can be addressed.⁴ By

⁴ This discussion paper is not intended to restate the law or to constitute a binding statement of how the Commissioner of Competition will exercise discretion in a particular situation. Enforcement decisions of the Commissioner and the

discussing these facts and theories, this paper not only describes how they may impact the analysis of big data, but how they are relevant in other types of antitrust investigations.

It is important to recognize at the outset that big data can have implications well beyond competition policy. For example, concerns about privacy and data security are relevant to a broader debate about big data. Nevertheless, this paper, consistent with the Bureau’s mandate and expertise, deliberately restricts attention to competition. It is mainly targeted at practitioners in the competition policy sphere, but it is hoped that regulators in other policy areas may benefit from this discussion as well.

This paper is composed of three main sections that separately discuss implications of big data for mergers and monopolistic practices,⁵ criminal cartels, and deceptive marketing. These three sections are preceded by a short section providing some background on what “data” and “big data” are.

II. What is “data” and “big data”?

The terms “data” and “big data” have become part of the vernacular while simultaneously connoting mystery. At the very least, different people may define the terms differently. This section provides a foundation for the balance of this paper by describing what is meant by “data” and “big data.” It draws from the academic literature as well as Bureau investigations. Ultimately, while it is helpful to recognize certain attributes of big data, a universally applicable definition is not necessary to understand its implications for competition investigations, which are discussed in the following sections. Put differently, the particular context in which big data is used is likely more important for competition investigations than any demarcation of where “data” becomes “big data.”

II.A. What is “data”?

The dictionary definition of “data” is *factual information (as measurements or statistics) used as a basis for reasoning, discussion or calculation.*⁶ Data can be qualitative or quantitative, and pertain to a variety of subjects (e.g., companies, governments, products, individuals). As the definition suggests, the importance of data derives from their use by individuals, companies, and governments to inform decisions.

ultimate resolution of issues will depend on the particular circumstances of each case. Final determination of the law is the responsibility of the Competition Tribunal and the courts.

⁵ Mergers and monopolistic practices include reviewable matters falling under Part VIII of the Act, including abuse of dominance, mergers and anti-competitive agreements.

⁶ Merriam-Webster Dictionary.

In this sense, the use of data is hardly new. General stores used to keep a record of information about customers located in their small town (including, for example, credit information). One of the first large-scale and systematic collections of data occurred in the mid-nineteenth century when the large American railroads began mandating regular, system-wide reports, which required the building of extensive comptroller departments, the hiring of full-time auditors, and the development of fundamental accounting concepts still in use today.⁷ At about the same time, mercantile agencies, such as precursors to the Dun & Bradstreet firm, began collecting and selling substantial amounts of credit reporting data.⁸

More recently, electronic information technology has allowed for data to be used in ways other than internal monitoring and control of an organization. For example, airline global distribution systems (GDS) have been the subject of antitrust disputes and governmental reviews around the world for several decades. GDS are reservation systems that allow travel agents to view information on the airlines' fares, schedules and seat availability. Use of these systems has been criticized as anti-competitive, in part, because airlines tended to make their competitors' information less easily available to travel agents than their own information.⁹ In Canada, the Competition Tribunal issued a Consent Order in 1989 following the merger between the reservation systems of Air Canada and Canadian Airlines. Among other things, the order required that Air Canada and Canadian Airlines make their data available to all computer reservation systems in Canada, and that their combined reservation system, Gemini, display information from all airlines to travel agents.¹⁰

Beyond the examples above, it is useful to recognize that data can pertain to at least four distinct subjects.

- The first is information on *individuals*. Examples can include a customer's purchase history, credit score, current locational information, or demographic information.¹¹ The detailed credit reporting data developed by mercantile agencies beginning in the 1800s is one such example.

⁷ Alfred D. Chandler Jr. *The Visible Hand*. Harvard University Press, 1977. 109-119. (“...a constant flow of information was essential to the efficient operation of these new large business domains. For the middle and top managers, control through statistics quickly became both a science and an art. This need for accurate information led to the devising of improved methods for collecting, collating, and analyzing a wide variety of data generated by the day-to-day operations of the enterprise. Of even more importance it brought a revolution in accounting...”)

⁸ Alfred D. Chandler Jr. *The Visible Hand*. Harvard University Press, 1977. 221-222.

⁹ Derek Saunders. “The Antitrust Implications of Computer Reservation Systems (CRSs).” *Journal of Air Law and Commerce*. 51 (1985): 157.

¹⁰ See *Director of Investigation & Research v. Air Canada et al.* Reasons for Consent Order. Jul. 7, 1989. Available at http://www.ct-tc.gc.ca/CMFiles/CT-1988-001_0576_4500J-4272004-5490.pdf.

¹¹ See, for example, Maurice E. Stucke and Allen P. Grunes. *Big Data and Competition Policy*. Oxford University Press, 2016, ¶ 2.01.

- The second is information on *internal performance* of an organization. The detailed accounting data developed by American railroads over a century and a half ago is one example.
- The third is information on *competitors* such as the locations of their facilities, sales, capacity, or prices. For example, the Kent Group collects and sells data on the retail fuel industry in Canada including information on competitor locations as well as sales volume by site, brand, and grade as well as retail pricing from surveys.¹²
- The fourth is information on the *environment* such as input prices, forecasts about demand, or information about the productive potential of a natural resource. For example, Thomson Reuters provides various types of market data to customers involved in various aspects of finance.¹³ Oil extraction and production firms use detailed geological data developed on tracts they are exploiting to make inferences about the likely productive potential of neighboring tracts.¹⁴

It is also useful to recognize that data may be either a product that is *directly* bought and sold or an *input* into a product that is bought and sold. For example, the Commissioner’s TMX abuse of dominance investigation considered the supply of “indicative market data” that was transacted between independent entities at a price.¹⁵ On the other hand, the Commissioner’s Google abuse of dominance investigation considered data as an input into the relevant markets under consideration (i.e., the markets for search and search advertising in Canada).¹⁶ In the Google investigation, while data were an important part of the industry, they were not priced to be transacted between independent entities.

Independent of the recent discussions surrounding “big data”—a term that will be discussed next—the Bureau has faced cases involving data as a product or input for decades. Beyond the recent Google and TMX investigations mentioned above, two prominent cases were *Nielsen*¹⁷ and *Tele-Direct*.¹⁸ While these cases are well known to and much studied by Canadian competition practitioners, their importance in this context is to demonstrate that the analysis of data is not new.¹⁹

¹² Kent Group Ltd. “Petroleum Volume Data.” Available at <http://www.kentgrouppltd.com/data/petroleum-volume-data/>

¹³ Thomson Reuters. “Market Data.” Available at <https://www.thomsonreuters.com/en/products-services/financial/market-data.html>

¹⁴ Kenneth Hendricks and Robert H. Porter. “An empirical study of an auction with asymmetric information.” *The American Economic Review* (1988): 865-883.

¹⁵ Competition Bureau. “Competition Bureau statement regarding its investigation into alleged anti-competitive conduct by TMX Group Limited” November 21, 2016. Available at <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/04157.html>

¹⁶ Competition Bureau. “Competition Bureau statement regarding its investigation into alleged anti-competitive conduct by Google.” April 19, 2016. Available at <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/04066.html>.

¹⁷ *Director of Investigation and Research v. D&B Companies of Canada Ltd (A.C. NIELSEN)* (1994).

¹⁸ *Director of Investigation and Research v. Tele-Direct (publications) Inc.* (1994).

¹⁹ In *Nielsen*, the Bureau alleged, under the abuse of dominance provisions of the Act, that Nielsen used exclusive

Notably, in all cases involving data, the Bureau has applied the same analytical framework as in cases involving other products.

II.B. What is “big data”?

The term “big data” has recently become popular as private companies seek to profit from its use, governments develop policies to support their agendas, and academics investigate impacts on society, information technology, and the economy. While the term lacks a single consensus definition, some attempts to formulate definitions illustrate characteristics that may be important in some situations. This section will briefly review some of these characteristics and will conclude by arguing that the exact contours of what constitutes a “big data investigation” are not as important as identifying the issues and challenges that are likely to arise in investigations where big data play a role.

Many attempts to define big data refer to the three “V”s: *volume, velocity and variety*, to which a fourth V for *value* is sometimes added.²⁰

- Volume and variety both refer to the *size* of data.
 - *Volume* generically refers to the size of a database as measured in bytes (or multiples thereof such as terabytes). Although not explicitly recognized in all treatments, the relevance of volume is presumably that there are non-trivial costs in collecting, processing, maintaining, and analyzing big data.
 - *Variety* refers to the breadth of data. For example, what types of consumers do the data capture? What is the extent of the information available on those consumers (e.g. age, address, previous purchasing experience)? Variety could refer to parts of data that are substitutes (e.g. a data set may record multiple credit scores that are, to some extent, interchangeable). Variety could also refer to parts of big data that are complementary—that is, when combined, two sets of data may have more value than when they are held separate (e.g. a data set may record information on age and sex to make marketing efforts more targeted).

agreements with retailers to deny competitors’ access to scanner data throughout Canada, preventing the entry of potential competitors. In *Tele-Direct*, while not a focus of the case, the Bureau alleged that, among other things, Tele-Direct’s superior access to data (business phone numbers from Bell Canada) at a preferred rate allowed it to publish its directory first each year, forcing small businesses to conform to its standards and forgo advertising in competing directories (given the cost of developing ads on multiple, different platforms).

²⁰ See, for example, OECD Directorate for Financial and Enterprise Affairs Competition Committee. “Big Data: Bringing Competition Policy to the Digital Era.” Background note by the Secretariat. November 29-30, 2016.

- Velocity refers to the speed with which big data can be collected. For example, some driving apps incorporate real-time (i.e., high-velocity) traffic data. In such applications, the value of big data may decrease as it becomes “stale.”

The fourth V, the *value* of data, has a mutual causal relationship with the other three Vs. For example, the volume and variety of data may allow firms to discover relationships, knowledge of which may be valuable. Similarly, the promise of value may cause a firm to increase the volume and variety of the data it collects. It bears emphasizing that the value of big data may not result from its being sold at some price; instead, value can result from its use as an input into other products and into marketing campaigns.

Recently, so-called big data brokers have gained some attention.²¹ These brokers collect, compile, and sell sophisticated and highly differentiated data. For example, some data drive marketing efforts and other data detect fraud; different big data sets may also vary in the populations they capture. Despite the existence of such rich data available from brokers, some firms devote significant resources to collecting, developing, and maintaining their own proprietary data. Those significant resource expenditures suggest that data brokers do not provide all data that have value.

Other definitions of big data exist beyond the three or four Vs. Andrea De Mauro, Marco Greco, and Michele Grimaldi classified the various definitions of Big Data they found in a review of the scholarly literature into four groups.²²

- Definitions that focus on *attributes* of data. The three or four Vs are examples of attributes of data.
- Definitions that focus on *technological requirements*. For example, some focus on the need for big data to be processed and analysed using new or non-conventional programs and methods.
- Definitions that focus on *thresholds*. For example, some of the literature has defined big data as data whose volume exceeds a certain threshold.
- Definitions that focus on *social impacts*. For example, articles that focus on defining Big Data in terms of its perception by individuals, decisions taken by firms, or privacy.

In an effort to encompass all four groups of definitions and consistent with the widespread adoption of the four Vs, they propose a new definition: “Big Data is the Information asset characterized by such a High Volume, Velocity and Variety to require specific Technology and Analytical Methods for its transformation into Value.”

²¹ Federal Trade Commission. “Data Brokers: A Call for Transparency and Accountability.” May 2014.

²² Andrea De Mauro, Marco Greco, and Michele Grimaldi. “A Formal Definition of Big Data Based on its Essential Features.” *Library Review* 65, no. 3 (2016): 122-135.

While the four Vs and the specialized technologies necessary to develop and analyze big data are undeniably important in some cases, circumscribing a rigid boundary that distinguishes “big data” from merely “data” seems a somewhat semantic task. Moreover, it is easy to identify examples where some element of such a definition is violated. For example, while velocity might be critical in a navigation application that avoids traffic jams, velocity is much less important in a navigation application that has no real-time traffic functionality.

Thus, this paper avoids drawing a bright line around what ought to constitute “big data.” Instead its focus is to identify issues and challenges that may arise in an investigation where big-data characteristics are arguably present. As such, this paper uses some examples that may not fit into a narrow definition of big data. For example, review websites provide consumers with data that may, or may not, constitute big data. However, the practice of submitting fake reviews on review websites, a practice known as “astroturfing,” can diminish the usefulness of the data available, thereby, harming consumers. As a result, that practice is addressed in section V on deceptive marketing practices.

III. Big data and mergers and monopolistic practices

The ability to improve existing products and services by utilizing large amounts of historical or real-time data has the potential to significantly increase value propositions for consumers. Thus, firms are increasingly harnessing data in ways that drive innovation and quality improvements across a range of industries. As a result, the competitive performance of firms, particularly in the digital economy, is increasingly driven by the ability to collect, analyze and use data.²³

In markets where there is a significant advantage to being an early-mover or to having the largest network or access to the most data, the competitive process may well result in markets with a small number of large firms possessing a degree of market power. As noted in the introduction, however, in Canada, market power gained by legitimate means, such as innovation or competition on the merits, is not prohibited. And rightly so. In market-based economies, incentives to innovate are in large part driven by the promise of profits that come from successfully outcompeting rivals. Competition policy should seek to preserve these incentives to the greatest extent possible. As such, the Act does not regulate market power or market outcomes (e.g. prices, concentration levels).

The civil provisions of the Act are generally aimed at prohibiting certain *means* by which market power may be created, enhanced or maintained. Thus, these provisions govern monopolistic conduct, agreements between competitors such as joint ventures, and mergers. The competitive significance of

²³ OECD. *Supporting Investment in Knowledge Capital, Growth and Innovation*. Paris: OECD Publishing, 2013, 319. (Big data now represents a core economic asset that can create significant competitive advantage for firms and drive innovation and growth.)

data, the role of data in driving innovation, as well as the prevalence of non-price and dynamic competition in data-centric industries must be recognized when considering competitive effects in mergers and monopolistic conduct matters involving big data.

While the Bureau has long investigated and taken action in mergers and conduct cases involving data,²⁴ two recent abuse of dominance investigations in particular highlight many of the emerging issues that have informed the Bureau’s consideration of competition issues in this area—Google and the Toronto Real Estate Board.

*Google Investigation*²⁵

In April 2016, the Bureau announced that it had discontinued an extensive abuse of dominance investigation into alleged anti-competitive conduct by Google related to online search, search advertising and display advertising services in Canada. In assessing the evidence and theories of competitive harm in this investigation, the Bureau closely considered a number of important emerging issues related to the competitive significance of data, including:

- Zero pricing for services (online search) which generate significant amounts of valuable data;
- Platforms and multi-sided markets that intermediate between users and advertisers on the basis of data; and
- Network effects wherein the more users and advertisers use a given search engine, the more it is able to leverage data to improve its product and, by extension, attract more users and advertisers.

*Toronto Real Estate Board Case*²⁶

The Bureau’s ongoing abuse of dominance case against the Toronto Real Estate Board (TREB) raises additional emerging issues when data is an input for new forms of dynamic competition. At the heart of the case are restrictions imposed by TREB on its members relating to access, display and use of real estate data. The Commissioner alleged that these restrictions have prevented the emergence of innovative, Internet-based business models and service offerings in respect of the supply of residential real estate brokerage services in the Greater Toronto Area.

²⁴ See the discussion of the *Nielsen* and *Tele-Direct* cases above.

²⁵ Competition Bureau, Position Statement, “Competition Bureau statement regarding its investigation into alleged anti-competitive conduct by Google,” 19 April 2016: <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/04066.html>.

²⁶ *The Commissioner of Competition v The Toronto Real Estate Board*, 2016 Comp. Trib. 7 [TREB]: http://www.ct-ic.gc.ca/CMFiles/CT-2011-003_Reasons%20for%20Order%20and%20Order_385_38_4-27-2016_8854.pdf. The decision is currently under appeal.

In its April 2016 decision, the Tribunal found that the restrictions imposed by TREB substantially reduced the degree of non-price competition including a considerable adverse impact on innovation, quality and the range of residential real estate brokerage services that would be offered in the absence of the restrictions.

Data played a central role in underpinning the innovative business models being excluded from the marketplace. Accordingly, this case and the Tribunal's decision touch on many salient and emerging issues, including:

- Market power, including through the control of access to data;
- The assessment of innovation and dynamic competition enabled by data;
- The role of qualitative evidence; and
- The existence and exercise of intellectual property rights over a database.

Bureau guidelines

Generally speaking, when analyzing mergers and monopolistic conduct cases, the Bureau will define the relevant market(s) at issue, assess market power, and consider the effects on competition of the activity in question (e.g. the merger, exclusionary conduct, or agreement between competitors). The Bureau's enforcement guidelines for mergers,²⁷ competitor collaborations,²⁸ and abuse of dominance²⁹ aim to provide general direction on its analytical framework. While these guidelines have generally proven to be sufficiently flexible thus far to address competition issues in the big data era, there are several areas where particular care is required when big data is at issue.

The remainder of this section explores how big data may affect the Bureau's traditional analytical framework for 1) market definition; 2) market power; 3) assessment of purpose (where relevant); and 4) competitive effects. Importantly, facts and theories relevant in big data investigations may be relevant in other investigations. For example, the economics of platforms are sometimes implicated in big data, but platforms are also relevant in non-big data contexts. This section's discussion is relevant to non-big data contexts inasmuch as there is an overlap of the relevant facts and theories.

²⁷ Competition Bureau, *Merger Enforcement Guidelines*, 6 October 2011: <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/03420.html>.

²⁸ Competition Bureau, *Competitor Collaboration Guidelines*, 23 December 2009: <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/03177.html>.

²⁹ Competition Bureau, *Enforcement Guidelines: The Abuse of Dominance Provisions*, 20 September 2012: <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/03497.html>.

III.A. Challenges with market definition

As described in its guidelines, the Bureau generally employs the “hypothetical monopolist test” to initially conceptualize the substitutability between products.³⁰ This tool is easier to apply in a scenario where data-related products or services are sold directly to customers at a price (e.g. companies compete to sell financial market data to businesses or investors). The closeness of competition between two firms selling data will depend on the extent to which customers view their products as substitutable, which may be measured in terms of how customers’ purchasing patterns would change in the event of a small but significant non-transitory increase in price. The Bureau also relies on evidence of functional interchangeability. For example, two sources of data are more likely to be viewed by customers as *substitutable* when they provide the same or similar information (e.g. similar financial data); whereas sources of data are more likely to be viewed as *complementary* when they offer different information or produce greater value when combined (e.g. mapping data and traffic pattern data).³¹

However, firms that use big data do not always sell data to customers at a price. A notable example is a multi-sided market or platform, which may *collect* data from consumers by offering products that are, at least nominally, “free” (e.g. search engines, social media platforms, mobile applications) and then use these data as an input into other services such as the sale of advertising. In the platform context, market definition can be complicated for a number of reasons.

First, how does one objectively measure the degree of substitutability between “free” products offered to customers by competing platforms? The answer may partly be that such firms compete on dimensions other than price, such as quality. For instance, when conceptualizing the hypothetical monopolist test it may be useful to think not of the price of the product but the quality of the service. While this formulation may be conceptually straightforward, its implementation may confront practical difficulties when applying a hypothetical monopolist test formulaically. Strictly speaking, this would seem to require the Bureau to measure changes in consumption in response to a small but significant change in quality. Faced with such difficulties, the Bureau may rely on other evidence of substitutability, such as views expressed in consumer surveys, business documents, or evidence of switching.

Second, even where a price is charged on all sides of the market, it is not always clear how to apply the hypothetical monopolist test. Suppose, for example, that two ride-sharing platforms propose to

³⁰ In the context of abuse of dominance cases, special care is required to determine the appropriate benchmark price using the hypothetical monopolist test to avoid falling into the cellophane trap.

³¹ Note that a relevant market may consist of a group of non-substitutable products, such as complementary data, if products are bought as a group and transaction costs are sufficiently high that buyers may not purchase various components separately from different sellers when faced with a price increase.

merge. The hypothetical monopolist test could be framed in terms of changes in consumption in response to an increase in the price paid by riders, the price paid by drivers, or the platform price, which is the sum of the two prices. While the appropriate starting point likely depends on the market at issue, the Competition Tribunal has found that:

... one side of the platform can be a candidate relevant product market for the purposes of the hypothetical monopolist test and that the SSNIP can be applied to the price charged to customers on that side of the platform provided both the interdependence of demand, feedback effects and ultimately changes in profit on both sides of the platform are taken into account.³²

While one side of a platform may constitute a properly defined market using the hypothetical monopolist test, a clear appreciation of the interaction between all sides of the market is required when defining markets involving platforms. For example, a newspaper may have less incentive to raise price to readers because of the resulting loss of advertising revenue.³³ However, when a market is drawn around one side of a platform, it may not be immediately obvious what the price for the product on that side of the platform represents and whether it should be interpreted in the same way as the price charged by a non-platform firm. For example, if a newspaper gains the ability to raise advertising rates only because it has increased its circulation by dropping the price to readers, such a price increase to advertisers may not result in extra profits and so may not reflect an increase in market power. In that sense, it differs from a price increase by a non-platform firm, which, all else equal, will result in extra profits. Platforms generally earn profits that are a function of the multiple prices they choose. Thus, exclusive focus on one price chosen by a platform can miss critical elements of the platform's business reality.³⁴

³² *The Commissioner of Competition v. Visa Canada Corporation and MasterCard International Incorporated*, 2013 Comp. Trib. 10, para. 189: http://www.ct-tc.gc.ca/CMFiles/CT-2010-010_Reasons%20for%20Order%20and%20Order%20Dismissing%20the%20Commissioner's%20Application_337_38_7-23-2013_7109.pdf.

³³ The Bureau's review of Postmedia's acquisition of English-language newspapers carefully considered the interaction between the readership and advertising sides of the market and, in examining the competitive effects on readership, noted that the merged entity would be incented to retain readership and maintain editorial quality in order to continue to attract advertisers to its newspapers. More information is available in the Bureau's Position Statement: <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/03899.html>

³⁴ Former US Department of Justice Assistant Attorney General Baxter was among the first to recognize this property of platforms in his study of payment cards. He proposed to "redefine what we mean as one unit of the product consumed. Rather than considering the demands of [the purchaser] P and [the merchant] M as demands for separate products, define one unit of product to consist of the bundle of transactional services that banks must supply jointly to P and M in order to facilitate the execution of one exchange of goods or services between P and M. Under this interpretation, the supply price of the product is the sum of the individual charges to P and to M." William F. Baxter. "Bank interchange of transactional paper: Legal and economic perspectives." *The Journal of Law & Economics* 26, no. 3 (1983): 541-588, 545.

Because these complications challenge the probative value of the hypothetical monopolist framework when a platform uses data as an input, and the fact that market definition is ultimately an analytical tool to assist in evaluating competitive effects, for certain cases involving big data or platforms in the digital economy it may be appropriate to rely on alternative methods to assess market definition or to forgo market definition as an initial step and focus on direct evidence of competitive effects.³⁵

III.B. Challenges with assessing market power

The assessment of market power is a key element in mergers and monopolistic conduct cases. Market power refers to the ability of firms to profitably cause one or more facets of competition, such as price, output, quality, variety, service, advertising, or innovation, to significantly deviate from competitive levels for a significant period of time. It is important to note, however, that developing valuable data through competition on the merits does not run afoul of the Act even if it results in significant market power. For example, a firm can create market power by developing a high-quality product or an efficient production process.

Analysis of market power in big data investigations can be straightforward. For example, one focus of the European Commission’s Microsoft/LinkedIn investigation was on a market for “customer relationship management software solutions.”³⁶ The European Commission dismissed competition concerns in this market because other competitors were present and access to the full LinkedIn database was not essential to compete. These principles are easy to understand and common to antitrust analysis. However, in some big data cases subtleties may arise that make the analysis more difficult. The discussion that follows is non-exhaustive and highlights three common indicia of market power where such challenges can arise.

Pricing studies

The Bureau may examine differences in prices to make inferences about market power. For example, an increase in price by firm A after exit by firm B may indicate that, without the competitive constraint of firm B, firm A possesses market power. However, special care must be taken when assessing the prices charged by platforms. For instance, a “high” price on one side of a platform may subsidize investments to attract users and their data to the platform and so may not indicate market power. Conversely, a platform with market power may charge a “low” (or even zero) price on one side of the platform. This suggests that the Bureau may need to consider pricing on the all sides of a

³⁵ *Merger Enforcement Guidelines*, para. 3.1 (Market definition is not necessarily the initial step, or a required step, but generally is undertaken.)

³⁶ European Commission Press release – Mergers: Commission approves acquisition of LinkedIn by Microsoft, subject to conditions, December 6, 2016, http://europa.eu/rapid/press-release_IP-16-4284_en.htm.

platform, or indeed on the platform as a whole, when considering pricing as an indicator of market power.

Barriers to entry and expansion

Data are increasingly becoming a critical input in certain markets and may serve as a significant barrier to entry or expansion.³⁷ In certain cases, access to and control over critical data that serve as an essential input may confer market power.³⁸

Switching costs related to data can constitute significant barriers to entry and expansion. For example, consumers may find it costly to transfer their data from one platform to a competing platform. In some cases, dominant firms may take actions to increase switching costs, for example by restrictive contracts. Such a practice can further entrench dominance, which may harm competition and constitute an abuse of dominance.

Data may also represent a barrier because of network effects. Network effects exist when the value or benefit derived from using a product increases with the number of other users. For example, search engines gather and analyze data from users who click on links and ads. Additional use, therefore, leads to improvements in algorithms that display more relevant search results and ads. While quality improves by exploiting network effects, the same mechanisms can create barriers to entry and expansion.

Similarly, an increase in quality can co-exist with barriers to entry and expansion when a firm has exclusive access to proprietary data. On the one hand, those data may improve the products and services available to consumers. On the other hand, those data can make entry and expansion by rivals more difficult.

Market shares

The Bureau recognizes that market shares may overestimate or underestimate a firm's market power.³⁹ This is particularly relevant in the era of big data as a firm's current position in a market may not reflect its future competitive significance. Of course, this is a challenge that is not unique to big data cases, but may be true in any case characterised by rapid change and innovation.

For example, as discussed in more detail in the following section, when assessing the acquisition of a firm with low market share but troves of valuable data, agencies should assess post-acquisition

³⁷ In some, but not all markets, data brokers may be viable sources of valuable data. See the discussion in section II.B.

³⁸ TREB, *supra* note, para 176.

³⁹ *Canada (Director of Investigation and Research) v Hilldown Holdings Ltd.*, 1992 CanLII 2092 (CT): <https://www.canlii.org/en/ca/cact/doc/1992/1992canlii2092/1992canlii2092.html?resultIndex=1>.

incentives and the importance of the data being acquired as these factors may impact future barriers to entry and likely competitive effects from the transaction.

III.C. Assessing purpose and business justifications

Purpose and business justification are relevant when analyzing mergers, monopolistic practices, and agreements between competitors, either as a matter of law (e.g. under abuse of dominance jurisprudence), to understand the rationale for business conduct or to provide a useful check on economic theories of harm. This section discusses some of the considerations that may be relevant to big data cases.

III.C.1. Incentives to foreclose with big data

Data can, as with any other asset, allow businesses to either improve their production process or offer products that are better targeted to customers' preferences. For example, shopping websites sometimes collect data about their customers' past purchases to provide them with more targeted offers in the future. Conceivably, the more useful data a company collects, the better it is able to compete by improving its offerings and maximizing its efficiency. It is therefore legitimate for businesses to try to acquire or access additional data, subject to applicable privacy laws, so long as those efforts do not harm their competitors' abilities to do the same. Antitrust issues generally do not arise when firms collect more data and antitrust does not usually impose on firms an obligation to share data that they have collected and developed. To do so may very well chill innovation, which is the very behaviour that antitrust is designed to protect.

Incumbent firms could take measures to prevent their competitors from obtaining data that are necessary to compete. Such a practice, if successful, harms competitors and competition. However, it is frequently challenging to distinguish competition on the merits from anticompetitive conduct because both sets of conduct can result in similar outcomes. For example, aggressive competition on the merits and predatory pricing both result in low prices for a period of time.

The Bureau may use the “no economic sense” test endorsed by the Tribunal in the TREB decision to distinguish between competition on the merits and anticompetitive conduct. The no economic sense test involves a determination of whether the target of the investigation “would likely be able to recover the costs incurred in pursuing a practice, solely with profits that do not depend on the actual or reasonably foreseeable anti-competitive effects in order to be realized.”⁴⁰ Operationalizing the no economic sense test may be challenging, however, when businesses offer several interrelated products

⁴⁰ TREB, *supra* note, para 315.

or services to consumers. The difficulty arises from measuring the strength of the complementarities between the different lines of business; while a practice may make no economic sense when viewed narrowly, that conclusion may change when viewed more broadly.

III.C.2. Intellectual property

The existence and exercise of intellectual property rights with respect to data may be a relevant consideration in big data cases, particularly when the ownership of data may confer market power and its exclusion may have competitive effects in a market.⁴¹

Section 79(5) of the Act establishes that a mere exercise of intellectual property rights is not an anti-competitive act:

For the purpose of this section, an act engaged in pursuant only to the exercise of any right or enjoyment of any interest derived under the *Copyright Act*, *Industrial Design Act*, *Integrated Circuit Topography Act*, *Patent Act*, *Trade-marks Act* or any other Act of Parliament pertaining to intellectual or industrial property is not an anti-competitive act.

To engage 79(5), it is necessary to first examine whether intellectual property is established, then whether the conduct is a mere exercise of an intellectual property right. Both these questions were considered in the TREB matter, where TREB argued that it held copyright over the MLS database as a compilation of real estate data.⁴²

To the extent intellectual property rights are salient to big data investigations, the Bureau notes that the assessment of such matters is highly fact-specific and the Bureau would consider intellectual property considerations on a case-by-case basis.

III.D. Assessing competitive effects

This section expands on factors that are likely to arise in the Bureau's analysis of the competitive effects of mergers and conduct involving big data—an increased emphasis on certain aspects

⁴¹ For a discussion of the interplay between intellectual property and the Act, see the Bureau's *Intellectual Property Enforcement Guidelines*, available at <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/04031.html>.

⁴² The Tribunal ultimately determined that TREB had not led sufficient evidence to prove a valid copyright in the MLS database. Instead, based on the evidence before it, TREB's specific compilation of data from real estate listings amounts to a mechanical exercise that does not attract copyright protection. Further, the Tribunal concluded that even if TREB has a valid copyright over the MLS database, the restrictions it had put in place are more than the mere exercise of its intellectual property rights, and that the Tribunal has the jurisdiction to make an order in this regard.

including 1) vertical competition issues, 2) prevention of competition, 3) coordinated effects, 4) dynamic competition and non-price effects.

III.D.1. Vertical effects

Big data is often an input into the production of goods or services. As a result, mergers and business practices involving big data may involve vertical antitrust issues.

For example, mergers involving a party that is active in the production of the relevant product, and another party involved in the collection and processing of data used in the production of the relevant product, may be characterized as vertical mergers. As in all vertical merger cases, the Bureau analyses the merged entity's ability and incentive to foreclose its competitors from accessing an input that is necessary to compete, and whether the extent of such foreclosure would be sufficient to prevent or lessen competition substantially.⁴³

Big data may also lead to the use of vertical restraints where a firm has access to data that is used as an input. For example, in its investigation of Google's business practices, the Bureau considered whether Google's agreements with certain third parties (e.g., websites or smartphone manufacturers, which created additional search entry points) excluded search rivals by denying them data (search queries) that may have otherwise been made on their search engines and, by extension, denying them the "search scale" necessary to compete with Google.⁴⁴

While mergers and business practices involving data as a production input can undoubtedly impact existing competition, the Bureau is likely to consider the impact on future competition as well, by assessing whether competition is likely to be *prevented* substantially. A merger may have the effect of preventing competition if a firm acquires data that are needed by other firms to enter the relevant market and effectively compete against the merged entity. Such considerations were relevant to the analysis of the Microsoft / LinkedIn merger, which was reviewed by several antitrust agencies in 2016.⁴⁵

⁴³ *Merger Enforcement Guidelines*, Part 11. "A non-horizontal merger may harm competition if the merged firm is able to limit or eliminate rival firms' access to inputs or markets, thereby reducing or eliminating rival firms' ability or incentive to compete."

⁴⁴ Based on the evidence at hand, the Bureau concluded that Google's agreements had not resulted in a substantial lessening or prevention of competition in Canada.

⁴⁵ The European Commission, in particular, noted in its decision that: "[t]he Commission looked at whether after the merger Microsoft would be able to shut out its competitors by ... denying its competitors access to the full LinkedIn database, thus preventing them from developing advanced customer relationship management functionalities also through machine learning." Source: European Commission Press release – Mergers: Commission approves acquisition of LinkedIn by Microsoft, subject to conditions, December 6, 2016, http://europa.eu/rapid/press-release_IP-16-4284_en.htm.

III.D.2. Prevention of competition

Similar to the challenges posed by big data in identifying anti-competitive practices and potential business justifications, the assessment of whether big data mergers and practices are likely to result in a substantial prevention of competition may be challenging due to the prospective nature of the competitive effects analysis and the need to understand the use to which the data will likely be put, *in the future*, to create or enhance a product with functionalities that perhaps do not exist at the time of the review.⁴⁶ The assessment of the counterfactual and the likelihood of competition materializing *but for* a merger or conduct necessarily involves an evaluation of business plans, their likelihood of success and their effect in the market.⁴⁷ In its decision in *Tervita*, the Supreme Court of Canada noted the following in respect of the timeframe to assess the likelihood of entry:⁴⁸

The timeframe that can be considered must of course be determined by the evidence in any given case. The evidence must be sufficient to meet the “likely” test on a balance of probabilities, keeping in mind that the further into the future the Tribunal looks the more difficult it will be to meet this test. Lead time is an important consideration, though this factor should not support an effort to look farther into the future than the evidence supports.

Business can be unpredictable and business decisions are not always based on objective facts and dispassionate logic; market conditions may change. In assessing whether a merger will likely prevent competition substantially, neither the Tribunal nor courts should claim to make future business decisions for companies. Factual findings about what a company may or may not do must be based on evidence of the decision the company itself would make; not the decision the Tribunal would make in the company’s circumstances.

⁴⁶ Such uncertainty about the preventing effects of a Big Data merger or practice were recognized by US FTC Commissioner Harbour in her dissenting statement about the Google/ DoubleClick merger in 2007, in which she predicted that “the merged firm will be capable of dominating the ‘Database of Intentions’” and stated that “the combination of Google and DoubleClick has the potential to profoundly alter the 21st century Internet-based economy – in ways we can imagine, and in ways we cannot.” Source: Dissenting Statement of Commissioner Harbour In the Matter of Google/DoubleClick. December 20, 2007. Available at <https://www.ftc.gov/public-statements/2007/12/dissenting-statement-commissioner-harbour-matter-googledoubleclick>.

⁴⁷ As an example, the Bureau’s abuse of dominance investigation into TMX focussed on whether the contractual clauses imposed by TMX Group were likely to substantially *prevent* competition in the provision of securities market data by preventing the entry of Aequitas’ CMV product. Accordingly, the Bureau’s competitive effects assessment focussed on whether Aequitas would likely be able to obtain a volume of private market data from investment dealers *but for* TMX Group’s contractual clauses. The evidence collected by the Bureau indicated that even in the absence of TMX Group’s contractual clauses, it was unlikely that sufficient future competition from Aequitas’ CMV would materialize. See *supra* note 6.

⁴⁸ *Tervita Corp. v. Canada* (Commissioner of Competition), paras 76-77: <https://scc-csc.lexum.com/scc-csc/scc-csc/en/item/14603/index.do>.

In fact, the requirement that the Tribunal rely on “evidence of the decision the company itself would make” may be challenging to fulfill in fast-changing industries, including certain industries where data are a key production input and where a company’s current market position or even a company’s current plans are not reflective of the same company’s market position and actions in the near future.

It should be noted that situations where a firm’s current market position does not reflect its competitive significance may be problematic for competition authorities that can only review transactions that cross certain pre-defined merger notification thresholds (e.g., based on assets or revenue/turnover). Fortunately, in Canada, the Commissioner can review and challenge non-notifiable transactions up to one year post-closing.⁴⁹ This residual jurisdiction to review, and if necessary challenge, non-notifiable mergers provides a useful “safety valve” to deal with exceptional cases that are not caught by notification thresholds but nevertheless have potentially significant anti-competitive effects. In principle, such cases could include pre-emptive acquisitions of disruptive firms that have amassed valuable data, but have not yet generated significant sales. That being said, identifying potentially problematic non-notifiable mergers may be challenging for the Bureau in the absence of complaints, media coverage or parties voluntarily coming forward.

III.D.3. Coordinated effects

Access by firms to certain data about their competitors may increase their ability to coordinate their behaviour with each other. Firms can analyze data about their competitors to gain insight into the actions that they have taken and into the strategies that led to those actions. As explained in further detail in section IV, conscious parallelism can stem from industry participants recognizing and reacting to the mutual interdependence of their decisions without any explicit agreement. For example, suppose Firm A weighs the benefits of additional sales from a price cut against the prospect that Firm B will respond by cutting prices. All else being equal, Firm A will be less likely to initiate such a price cut the more quickly it expects Firm B to observe it and the more likely Firm B is to respond by matching it.⁵⁰ This, in turn, depends on the level of transparency in the market, the rate at which information on relevant competitive variables can be collected and processed by rivals, and how rapidly they can be acted upon.

In principle, the increasing availability of digitized, real-time pricing data, made possible by e-commerce, has increased transparency. Intelligence gathering tasks that once required costly, time-consuming or imperfect monitoring exercises (e.g. drive-arounds or comparison shopping), may now

⁴⁹ Most notable to date being *The Commissioner of Competition v CCS Corporation et al.*, 2012 Comp. Trib. 14, which was ultimately decided by the Supreme Court of Canada: <https://scc-csc.lexum.com/scc-csc/scc-csc/en/item/14603/index.do>.

⁵⁰ Conversely, Firm A will be more likely to lead a price increase, the sooner it expects Firm B to notice it, and the more likely Firm B is to follow.

be performed almost instantaneously by computer algorithms or bots. Similarly, pricing decisions once made by managers may be delegated to computers, enabling real-time responses to the actions of rivals. Whether these developments have served to enhance competition in markets, or have weakened it, or have had no effect at all, likely differs from case to case. What seems clear, however, is that competition agencies should consider the impact of big data on the ability of firms to coordinate in markets, and whether this exacerbates the impact of mergers or anti-competitive practices by giving rise to coordinated effects.

It would seem that big data can facilitate coordinated effects in at least two distinct ways. First, in cases where availability of data makes a market conducive to coordination (as described above), this can exacerbate the impact of a merger or anti-competitive practice that removes some other important constraint on coordination.⁵¹ For example, the acquisition of a maverick firm may be more problematic in a market where big data would otherwise facilitate coordination. Such a case may have no impact on the availability of big data, but big data serves as an environmental factor (like, say, the existence of regulatory barriers or multi-market contact) that may support a coordinated effects theory of harm.

The second case is one where a merger or anti-competitive practice facilitates coordination by making data more readily available or transparent.

An example of a merger where the Bureau concluded that the combination of datasets was likely to result in coordinated effects was the recent acquisition by McKesson of Katz Group's healthcare business. Among other things, the Bureau concluded that the combination of the data collected by McKesson's wholesale business and the retail data collected by the Katz Group was likely to substantially lessen or prevent competition at the retail level as it would enable the merged entity to better anticipate its competitors' behaviour and coordinate its reactions with theirs. To address the Bureau's concerns, McKesson committed, among other things, to establishing a series of firewalls restricting the transmission of data between the various parts of the merged entity's business.⁵²

In contrast, there may also be circumstances when the acquisition of data may result in an increased level of competition between firms. For instance a merger or a joint venture could allow smaller firms to pool data to improve their offerings or better compete with larger players. Another potential

⁵¹ Section 6.26 of the *Merger Enforcement Guidelines* state that when making the assessment of whether competition is likely to be prevented or lessened substantially as a result of a merger, "the Bureau considers a number of factors, including the presence of factors necessary for successful coordination and those that are conducive to coordination. The mere presence of such factors, however, is not sufficient to conclude that there are competition concerns. Rather, at issue is whether the merger impacts these factors in such a way that makes coordination or more effective coordination more likely".

⁵² Competition Bureau, Position Statement, "Competition Bureau Statement Regarding McKesson's Acquisition of Katz Group's Healthcare Business", 16 December 2016, <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/04174.html>

example would be a situation in which a merger or business practice enables targeted discounting to consumers. If this discounting is difficult for rivals to detect it may decrease the likelihood of coordination. This underscores the need for the Bureau to assess the impact of mergers and business practices involving data on a case-by-case basis.

III.D.4. Dynamic competition and non-price effects

Static competition typically focusses on price rivalry and takes an existing set of products, services and competitors in an industry as given. Dynamic competition embodies product and process innovation, which are increasingly fuelled by the collection and analysis of data in a number of industries. For example, firms engage in static competition when they compete on price to sell a given set of data; firms engage in dynamic competition when they undertake improvements and enhancements to the data they are marketing.

Since the use of big data has significant potential benefits to enhance innovation and other non-price dimensions of competition, the reverse must be true as well—denying firms the ability to compete on the merits through the collection and use of big data. The importance of dynamic competition was noted by the Tribunal, which wrote in the TREB decision that the case “focuses on dynamic competition, including innovation, the most important type of competition.”⁵³

Assessing and predicting competitive effects on price and output in a context where dynamic competition is important faces inherent difficulties associated with the measurement and quantification of innovation. In contrast, the analytical and empirical tools for evaluating price and output effects where competition is static are more advanced and have been accepted by courts.⁵⁴ In response, the Tribunal has recognized that there may be a greater need for the Commissioner to rely on qualitative evidence, as opposed to quantitative evidence, in cases where dynamic competition is important:

The Tribunal also recognizes that there may be a greater need for the Commissioner to rely on qualitative evidence in innovation cases like this one. This is because dynamic competition is generally more difficult to measure and to quantify. Indeed, when dealing with innovation, reliable statistical or empirical evidence is sometimes not available and the Commissioner may need to resort to more qualitative tools and instruments to demonstrate the competitive effects of a challenged conduct. Such

⁵³ TREB, *supra* note, para. 712.

⁵⁴ Remarks by John Pecman, Commissioner of Competition, Innovation and Antitrust Workshop, November 4, 2014: <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/03834.html>

evidence can take the form of business documents, witness statements and testimonies, industry analyses, etc.⁵⁵

The Bureau may rely on natural experiments to inform competitive effects analyses. Natural experiments are often useful to assess a counterfactual by examining historical events that link changes in competitive conditions (e.g. entry or exit of firms, presence of certain competitors, products, services, contractual practices) to changes in observable effects. In appropriate circumstances, the study of events and their impact on competition in one market can be very informative to an assessment of likely effects in another market. Natural experiments may be even more important in assessing non-price effects as they provide a more identifiable and measurable estimation of the effects of a change in the market against a baseline situation. For example, observing and analyzing the level of quality after the occurrence of entry and exit events in a market can be helpful in estimating the likely effects of a merger in a similar market.

Non-price dimensions of competition typically include innovation, quality, variety, service and advertising. Another potentially significant type of non-price effect involving big data is privacy. To the extent that consumers value privacy, firms may compete with respect to privacy safeguards or transparency in respect of how their data may be used. In markets where firms compete on the basis of privacy, mergers, joint ventures, or monopolistic practices can substantially lessen or prevent competition by reducing competition in this dimension. For example, take two mobile apps that compete for downloads on the basis of restrictions on the use of consumer data. A merger of these two app businesses may substantially lessen competition by giving the merged entity the ability to exercise market power by reducing privacy assurances post transaction. Importantly, this effect does not require firms to breach privacy laws. Competition can drive big data firms to provide more privacy than legally required just as competition may drive automobile manufacturers to design vehicles that exceed minimum safety and emissions requirements.

When a case focuses on non-price effects and qualitative evidence, it may be possible to quantify certain measures of quality, such as the speed of delivery of a product, the number of options or product features available to consumers, or hours of operation. Other dimensions of quality may not be directly measurable or may be more difficult to express in dollar terms, such as privacy. Measuring the welfare impacts of non-price effects is challenging, which could have consequences for provisions of the Act that include an efficiencies defence, namely section 96 and subsection 90.1 (4) of the Act, which apply to mergers and agreements between competitors respectively. The jurisprudence has

⁵⁵ TREB, *supra* note, para. 471.

emphasized the importance of quantifying anti-competitive effects wherever possible when an efficiencies defence is raised.⁵⁶

III.E. Efficiencies

Although firms may use big data in ways that prevent or lessen competition, it bears re-emphasizing that it can also be the source of important innovation and positive economic outcome. The large size and variety of data available to companies has allowed for the development of ground-breaking innovations that create significant economic value for consumers. For example, the wide breadth of data collected, processed and used in the development of Google Maps has allowed Google to refine the application and greatly simplify the search for directions or the location of a nearby business.

Similarly, dynamic efficiencies may result from mergers of businesses that use big data. Dynamic efficiencies can be defined as the optimal introduction of new products and production processes over time. For example, the data acquired through a merger may allow a firm to develop and bring to market a new, more efficient product, faster than it would otherwise have absent the merger. Dynamic efficiencies can affect a merging firm's costs of production or the characteristics of products and services offered and are distinct from claimed productive efficiencies such as headcount reductions or achieving economies of scale.⁵⁷

When a merger, agreement or arrangement creates, maintains or enhances market power, s.96 and section 90.1 (4) of the Act provide a trade-off framework in which efficiencies that are likely to be brought about by a merger, agreement or arrangement are evaluated against the anti-competitive effects that are likely to result. More specifically, s.96 states that:

The Tribunal shall not make an order under section 92 if it finds that the merger or proposed merger in respect of which the application is made has brought about or is likely to bring about gains in efficiency that will be greater than, and will offset, the effects of any prevention or lessening of competition that will result or is likely to

⁵⁶ As stated in the Supreme Court of Canada's decision in *Tervita*, *supra* note 48, p.165, "it is the Commissioner's burden to quantify all quantifiable anti-competitive effects. Effects that can be quantified should be quantified, even as estimates, provided such estimates are grounded in evidence that can be challenged and weighed. If effects are realistically measurable, failure to at least estimate the quantification of those effects will not result in the effects being assessed on a qualitative basis. Effects will only be considered qualitatively if they cannot be quantitatively estimated."

⁵⁷ A useful illustration is the TomTom / Tele Atlas transaction reviewed by the European Commission. In that case, the Commission noted the parties' claims that the vertical integration between TomTom (a maker of portable navigational devices) and Tele-Atlas (a seller of map databases) could allow Tele-Atlas to benefit from the feedback data gathered by TomTom, allowing it to produce "better maps—faster." European Commission, "TomTom/Tele Atlas", Comp/M. 4854, May 14, 2008, http://ec.europa.eu/competition/mergers/cases/decisions/m4854_20080514_20682_en.pdf, paras 244-248.

result from the merger or proposed merger and that the gains in efficiency would not likely be attained if the order were made.⁵⁸

In appropriate cases and when provided with the parties' evidence substantiating their efficiencies claims, the Bureau makes an assessment of whether the efficiency gains that are likely to be brought about by a merger or agreement will be greater than and offset the anti-competitive effects.

Dynamic efficiencies, including those that are brought about by the combination of data, are relevant to this trade-off analysis. As is the case with other types of efficiencies, when the Bureau concludes that a merger, agreement or arrangement is likely to result in a substantial lessening or prevention of competition, the burden is on the parties to demonstrate that efficiencies are likely to occur, are brought about by the merger, agreement or arrangement and would not likely be attained if an order under section 92 or 90.1 were made, and are greater than and offset the anti-competitive effects.

Applying this trade-off framework to big data cases is a challenge because assessing and quantifying the impact of a merger on the ability and incentive to innovate may be complicated. Dynamic efficiencies that result from the improvement of production processes typically result in a change in the merged entity's costs and may be treated in ways similar to standard productive efficiencies. When dynamic efficiencies lead to the introduction of new products and services being offered to customers, such efficiencies should be associated with an increase in consumer surplus, which can be measured as the consumer's willingness to pay less the price they pay for the new product.

Methods exist for assessing the welfare effects of product introductions retrospectively,⁵⁹ however dynamic efficiency claims are likely to involve prospective introductions of products. Analysis of those claims will ultimately depend on available data and specifics of the dynamic efficiencies claimed. For example, if the claimed dynamic efficiency involves the introduction of a product that is available in another geography, a possible approach is the identification and analysis of claimed efficiencies using this other geography as a natural experiment. In all cases, similar to the assessment of the effects that are likely to result from a particular big data merger or monopolistic practice, the assessment of dynamic efficiencies faces challenges relating to the uncertainty of estimating the welfare effects associated with the prospective introduction of new goods or production processes.

⁵⁸ Section 90.1 (4) is substantially similar.

⁵⁹ For example, see Amil Petrin. "Quantifying the benefits of new products: The case of the minivan." *Journal of Political Economy* 110, no. 4 (2002): 705-729.

III.F. Remedies

Designing and implementing appropriate remedies to anti-competitive mergers and monopolistic practices is a complex process as the Bureau strives to ensure both the effectiveness and the ease of application of the remedy and to preserve ex ante incentives to innovate (i.e. avoid unintended chilling effects). Big data investigations bring additional challenges to this process as there may be intellectual property issues at play and issues related to the initial relationship between data providers and data users.

III.F.1. Structural remedies

Structural remedies usually involve the divestiture of assets. For example, consider a merger between two firms that collect, process, and sell data. If the Bureau finds that the merger is likely to substantially prevent or lessen competition, a divestiture of one of the firm's data businesses may ensure that any harmful effect brought about by the merger is reduced, if not eliminated, such that competition otherwise lost due to a merger is maintained or preserved. The Bureau normally prefers structural remedies in merger cases because the terms are more clear and certain, less costly to administer, and are readily enforceable. While divestiture is possible for conduct cases, remedies more typically take the form of prohibition orders (i.e. behavioural remedies) that address the anti-competitive conduct.

The divestiture of data itself may also be an acceptable structural remedy. An important characteristic of big data is that it may be non-rivalrous—i.e. it can be simultaneously exploited by multiple users.⁶⁰ While a single production facility cannot be used by multiple firms simultaneously, a dataset can, simply by copying it. Unlike a divestiture involving tangible assets, the existence of the copy does not limit the original owner's ability to compete. For example, in the Thomson Reuters merger review, competition agencies were concerned that the acquisition would concentrate market power in certain markets for the provision of certain types of financial data.⁶¹ As part of the settlement, Thomson agreed to divest copies of certain datasets, which allowed Thomson Reuters to continue to compete using those datasets.

Even in cases where divestiture appears to be an appropriate remedy, complications may arise in big data cases, especially if updates to the data are required post-divestiture due to a limited “shelf-life” of data. To illustrate, suppose a baseline circumstance where Firm A divests to Firm B a set of data and that Firm B requires no further support from Firm A to compete effectively with those data. In

⁶⁰ See, for example, §3.a.aa in Autorité de la Concurrence and Bundeskartellamt. “Competition Law and Data.” May 10, 2016. Available at <http://www.autoritedelaconcurrence.fr/doc/reportcompetitionlawanddatafinal.pdf>.

⁶¹ *U.S. v. The Thomson Corp. and Reuters Group PLC*. Competitive Impact Statement. February 19, 2008. Available at <https://www.justice.gov/atr/case-document/competitive-impact-statement-207>.

such a case, Firm A can take no action post-divestiture that limits Firm B's ability to compete with the data. Against that baseline, suppose that the value of the data depends on regular updates that only Firm A has the ability to perform. If the divestiture requires that Firm A provide ongoing updates to Firm B, then Firm A has an incentive to under-provide those updates. That under-provision is possible when an antitrust enforcer cannot write a divestiture order that calls out the specific actions Firm A must take to support Firm B's access to and use of the data (e.g. updates, training). In such a case, Firm A has an *ex ante* incentive to agree to the divestiture, but an *ex post* incentive and ability to take actions that contravene the enforcer's intention, which is to enable Firm B to compete. In such a case, the appropriate remedy may require the inclusion of a behavioural component (e.g. the requirement for Firm A to provide specific updates to Firm B), which, as discussed below, creates challenges.

III.F.2. Quasi-structural and behavioural remedies

In cases where data are an input into the relevant market (e.g. vertical mergers or monopolistic practices involving access to data as an input) and in cases where data are the relevant product market, a structural remedy may not be available or sufficient. In such cases, the Bureau will likely seek to obtain a quasi-structural or a behavioural remedy, or a combination of the two. A quasi-structural remedy, while not necessarily involving the sale of a business or a part of a business, modifies the structure of a market by facilitating competition, for example by lowering barriers to entry. A common example of a quasi-structural remedy is the licensing of intellectual property. Behavioural remedies, on the other hand, dictate what the target can and cannot do, and should also aim to facilitate competition rather than control outcomes. Even in non-data cases, designing appropriate quasi-structural and behavioural remedies is challenging as it is difficult to replicate a competitive market without the need to closely monitor the market in the short or long term.⁶²

Remedies to anti-competitive practices involving big data may involve the requirement to cease particular conduct. For example, in response to concerns that Google's AdWords API Terms and Conditions prevented software developers that help companies manage their search advertising campaigns from easily transferring information between Google advertising campaigns and advertising on competing platforms, Google committed to not reintroducing these restrictive API

⁶² John E. Kwoka and Diana L. Moss. "Behavioral merger remedies: evaluation and implications for antitrust enforcement." *The Antitrust Bulletin* 57, no. 4 (2012): 979-1011. ("But allowing the merger and then requiring the merged firm to ignore the incentives inherent in its integrated structure is both paradoxical and likely difficult to achieve. Furthermore, the behaviour that such remedies seek to prohibit or require is often difficult to fully specify, leading to subsequent enforcement issues... As a result, behavioural rules usually must be supplemented with close and ongoing oversight of the merged firm's actual conduct...")

clauses in Canada or the United States and any other API clauses that have the same effect, for a period of five years.⁶³

Beyond requiring a firm to cease a particular course of conduct, an appropriate remedy may, in exceptional cases, require that data be made available to competitors for use as an input, for example through the compulsory licensing of intellectual property, which is not new to antitrust. In such cases, data may be considered to be an “essential facility,” without access to which a firm may not be able to compete effectively in a downstream market. Providing access to the data may be an appropriate quasi-structural remedy allowing potential competitors in the downstream market to overcome their main barrier to entry. However, considerations related to intellectual property rights and the structure of the relationship with data providers may pose challenges to the design and implementation of data remedies. The Bureau is mindful that mandating licensing of data can potentially chill incentives to innovate.

At times, when a firm acts as an aggregator of data, it may also be difficult to identify who the owner of the data is—the company who originally collected the data, or the aggregator. In addition, the nature of the relationship and agreements between the initial data providers and the target of a Bureau investigation may also act as barriers to mandating access to the data. For example, mandating access to data may require the consent of the original data providers, although such consent may not be required to comply with a court order or law.

IV. Big data and cartels

This section discusses issues related to big data and cartels. Section IV.A considers big data, pricing algorithms and cartels. Section IV.B notes conscious parallelism and the unilateral use of data and algorithms in the marketplace. Section IV.C discusses facilitating practices and cautions against conduct that facilitates the formation of data-related cartels.

Collaborations between competitors that do not constitute naked restraints on competition, for example joint ventures, strategic alliances or franchise agreements, are dealt with outside the criminal cartels framework in Canada and are not addressed in this part of the paper. These forms of competitor collaborations may be subject to review under a civil agreement provision, section 90.1 of the Act, which prohibits agreements only where they are likely to substantially lessen or prevent competition. The Bureau’s *Competitor Collaboration Guidelines*⁶⁴ are a useful resource outlining the

⁶³ Google Position Statement, *supra* note.

⁶⁴ Competition Bureau Enforcement Guidelines – *Competitor Collaboration Guidelines*:
<http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/03177.html>.

Bureau’s general approach in applying sections 45 and 90.1 of the Act to collaborations between competitors.

IV.A. Big data and hard-core cartels

Hard-core cartels are the most egregious form of anti-competitive conduct. Prohibitions against this conduct are found in most jurisdictions and are well-founded given that a cartel agreement expressly aims to restrict or lessen competition. The criminal cartel provisions prohibit agreements between competitors to fix prices, allocate markets, or restrict output that constitute “naked restraints” on competition (section 45 of the Act). Undisclosed agreements between competitors with respect to bids and tenders are also prohibited (section 47 of the Act). As criminal offences, cartels involve a *mens rea* component, or criminal intent, on the part of conspirators as an essential element.

Cartels have used data to facilitate and implement agreements for a long time. One example is the vitamin cartel that agreed to fix prices for vitamins in the 1990s across several jurisdictions.⁶⁵ The underlying objective of the agreement was to stabilise the global market share of each producer and control the volume of output.⁶⁶ Manufacturers shared information on the volume of output and analyzed large amounts of information and accounting records⁶⁷ to monitor the implementation and compliance. Data was instrumental in achieving their shared objective.

It is natural that cartels would leverage technological innovation to facilitate their operations. In particular, big data has introduced increasingly innovative means to communicate and share digital information and, correspondingly, more sophisticated ways to conspire. Big data is used to calibrate pricing algorithms that adjust rates almost instantaneously, which can be a powerful tool in the hands of conspirators seeking to manipulate the market. For instance, conspirators may agree to use the same algorithm to maintain prices for a large array of products. In another example, a cartel could share large data sets of inventory information to facilitate an agreement to restrict output as each conspirator would be able to monitor the production of competitors.

Conceptually, however, big data does not alter the core elements of a cartel case. To meet the elements of a cartel offence in Canada and in many other jurisdictions, there must be an agreement or “meeting of the minds” among co-conspirators. Big data may introduce more efficient and powerful ways to implement and manage a cartel, but it does not constitute a new kind of activity. Despite the increasing sophistication of these tools, the offence is still rooted in the *agreement* itself.

⁶⁵ European Commission decision of November 21 2001, Case COMP/E-1/37.512 - Vitamins, 2003 OJ EC L 6/1 (<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32003D0002&from=EN>) Accessed March 27, 2017.

⁶⁶ *Id* at ¶ 164.

⁶⁷ *Id* at ¶¶ 540-544.

An example of an innovative way to manage a cartel is illustrated in the 2015 indictment by US Department of Justice (DOJ) of several UK companies who allegedly conspired to fix prices of posters sold through Amazon Marketplace.⁶⁸ According to DOJ, the co-conspirators “adopted specific pricing algorithms for the sale of certain posters with the goal of coordinating changes to their respective prices and wrote computer code that instructed algorithm-based software to set prices in conformity with this agreement.”⁶⁹ This innovation became necessary after manual changes to pricing became too time-consuming. The United Kingdom Competition and Markets Authority also fined the company following a cartel investigation and an infringement decision.⁷⁰

Another example involves an online platform described in a decision of the European Court of Justice in the Eturas UAB (Eturas) case.⁷¹ Travel agencies contracted with an online travel booking system, Eturas, to provide a platform for travel bookings on the agencies’ websites. The license agreement did not extend to pricing; however, Eturas instituted a cap on discounts and circulated an email notification to travel agencies. While the legal analysis focused on whether travel agencies were aware and had expressed common intention to limit discounts, the case illustrates that communication among users of an online platform may lead to the creation of an unlawful agreement, akin to striking a deal in a smoke-filled room.

IV.B. Big data and conscious parallelism

This section addresses the unilateral use of big data by companies where there is no agreement to limit competition. Even in the absence of an agreement, companies may exhibit accommodating behaviour as a result of unilateral monitoring and response to the actions of competitors. This type of behaviour, referred to as “conscious parallelism,” includes situations where competitors unilaterally adopt similar or identical business practices or pricing. Such an outcome is the result of rational and profit-maximizing strategies based on observations of market trends and the activities of competitors.

⁶⁸ US Department of Justice. “Former E-Commerce Executive Charged with Price Fixing in the Antitrust Division’s First Online Marketplace Prosecution.” Press release April 6, 2016. Available at <https://www.justice.gov/opa/pr/former-e-commerce-executive-charged-price-fixing-antitrust-divisions-first-online-marketplace>.

⁶⁹ *Id.*

⁷⁰ Competition & Markets Authority. “Online sales of posters and frames Case 50223.” Decision of the Competition and Markets Authority. August 12, 2016. Available at <https://assets.publishing.service.gov.uk/media/57ee7c2740f0b606dc000018/case-50223-final-non-confidential-infringement-decision.pdf>.

⁷¹ European Court of Justice, Case C-74/14, January 21, 2016 <http://curia.europa.eu/juris/document/document.jsf?jsessionid=9ea7d2dc30dde43e6a10fb104b0f9a4ad6d8ff294277.e34KaxiLc3qMb40Rch0SaxuSanv0?text=&docid=173680&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=674759>.

Conscious parallelism does not fall within the purview of cartel enforcement. However, where a merger or other business practice increases the likelihood of coordinated outcomes through conscious parallelism, such mergers or other practices may be prohibited under the civil provisions of the Act on the basis that they lessen or prevent competition.

In a growing digital economy, companies are using data tools in new ways to observe and analyze the behaviour of both consumers and competitors. Software can now monitor a competitor's prices across thousands of products and react accordingly by adjusting prices for a similarly large set of goods in a short amount of time. Companies are increasingly relying on automated pricing algorithms, or "web-crawlers," rather than manually monitoring and adjusting prices.⁷² In one particularly vivid example, a "robot price war" caused a book on Amazon to retail for over \$23 million after two sellers used algorithms to adjust their prices on the basis of the other's offer.⁷³ While the Amazon example is extreme, it demonstrates that algorithms can have real effects in online marketplaces where there is no need to physically re-label products or print catalogues and where changes can be implemented instantaneously. Through these new tools, big data has created an environment where competitors are better able to "see" the market and more quickly respond to changes in both consumer and competitor behaviour.

Although these kinds of monitoring activities are now more advanced, they are not new. Consider, for example, a gasoline retailer who observes its competitor in a nearby neighbourhood post new prices on a billboard, and adjust its own in response. The data collected from the publicly available information (the billboard price) is then analyzed to develop a strategy for competing in the local gas industry, by adjusting the retailer's own price. This example may be simplistic as compared to the complex and multi-faceted markets that operate currently, but monitoring activities of this nature are commonplace.

Firms are also not new to the analysis of data collected about their competitors. For example, the Supreme Court of Canada commented over 35 years ago on the use of pricing formulas in *Atlantic Sugar*,⁷⁴ a case where the Crown accused sugar refiners in eastern Canada of price fixing. The basis for this allegation was the stability of market shares, uniformity of prices, and public posting of one

⁷² According to a report published by the European Commission in 2016, more than half of surveyed retailers track the online prices of competitors and 67% use software programs designed to automatically perform this monitoring. A majority of these companies subsequently adjust prices to match those of their competitors. In some cases, prices are adjusted automatically by the same software, which also functions as monitor.

See European Commission. "Commission Staff Working Document - Preliminary Report on E-commerce Sector Inquiry." Available at http://ec.europa.eu/competition/antitrust/sector_inquiry_preliminary_report_en.pdf.

⁷³ Michael Eisen. "Amazon's \$23,698,655.93 book about flies." Blog Post. Available at <http://www.michaeleisen.org/blog/?p=358>.

⁷⁴ *Atlantic Sugar Refineries Co. Ltd. et al. v. Attorney General of Canada*, [1980] 2 SCR 644

firm's price. The court, however, found that market outcomes were a result of "independent decisions called 'conscious parallelism' which is not illegal."⁷⁵ The court went on to explain:

"The evidence was clear, however, that not only were its competitors immediately aware of Redpath's [one of the accused] list price the moment a new price was posted in its lobby, they also in time were able to discover Redpath's pricing formula by a process of deduction from available data. Yet the trial judge held, correctly I think, that this did not constitute a conspiracy to maintain uniform prices according to Redpath's formula but merely "conscious parallelism."⁷⁶

Atlantic Sugar illustrates how the unilateral use of more sophisticated algorithms extends practices that companies employed even before the advent of modern information technology. With better technology, companies can observe what a competitor is doing (via monitoring software instead of a human reading a list price) and adjust prices (by way of an algorithm instead of human intervention) to maximize profits.

Ultimately, big data is likely to introduce a difference of degree rather than a difference of kind when it comes to conscious parallelism.

Given the status of purely unilateral conscious parallelism as a practice not subject to criminal liability in many jurisdictions, including Canada, it would be difficult to carve out the use of big data as a prohibited activity in the monitoring of one's competitors. That is to say, there is a broad consensus that the unilateral monitoring and responding to data collected on one's competitors is legal. To alter this framework in such a way as to cast the use of *big* data as illegal in performing the same activity that is otherwise legal through the use of just data is likely unworkable as it would require that some bright line be drawn to identify at what point data transforms into big data.

Failing that change, a wholesale change in the way conscious parallelism is viewed in cartel enforcement would be required. That option, however, is not attractive because it would radically change enforcement for a significant size of the economy and would likely chill innovative, procompetitive uses of big data. To be clear, in certain instances, data about competitors may soften competition when industry participants recognize that there is a degree of interdependence to their decisions. But in other cases, data collected may sharpen competition. For example, companies may be incentivized to innovate or enter previously unexplored segments if they notice that competitors are active in that sphere. Analysis of data about competitors can be critical in helping identify such opportunities.

⁷⁵ *Id.*, p.656.

⁷⁶ *Id.*

IV.C. Big data and facilitating practices

More nuanced questions arise when considering cases that go beyond purely unilateral data collection and analysis. Cases where parallel behaviour is accompanied by “facilitating practices” may raise concerns under the Act. In various jurisdictions including Canada, facilitating practices involve activities that have the potential to facilitate, or may be indicators of the existence of, an agreement between competitors.⁷⁷ In Canada, section 45(3) of the Act permits a court to infer the existence of a conspiracy, agreement or arrangement from circumstantial evidence, with or without direct evidence of communication between or among the alleged parties to it. Facilitating practices may be examined in the context of the cartels regime, but may also be captured by the civil anti-competitive agreements provision of the Act (section 90.1). Another way to interpret facilitating practices is as unilateral behaviours that fall short of a traditional agreement but, nevertheless, restrict competition.⁷⁸ This second interpretation does not have application within the criminal cartels regime in Canada.

Some examples of facilitating practices include circulating price lists to competitors, advance announcement of price changes,⁷⁹ adoption of similar pricing systems,⁸⁰ most-favoured-nation clauses, agreed reference points in pricing, minimum advertised price agreements,⁸¹ and participation in regular meetings with competitors prior to a period of stability. Some facilitating practices can have a legitimate business purpose, but nevertheless may assist competitors in coordinating conduct more effectively and, ultimately, lead to anti-competitive outcomes. Distinguishing between conduct that is the result of interdependence and conduct that transgresses into criminally unlawful conduct is difficult. The Organisation for Economic Co-operation and Development (OECD)’s roundtable on facilitating practices suggests that an unlawful facilitating practice should be identified only where there is culpable conduct for which meaningful relief can be ordered.⁸² Culpable conduct depends on the rules of each jurisdiction and the approach the jurisdiction takes with respect to establishing proof of agreement or arrangement amongst competitors.

Big data and algorithms may expand the array of activities that constitute facilitating practices. Given the limited number of cases at the intersection of cartels and big data, the following examples are

⁷⁷ Calvin S. Goldman and John D. Bodrug, eds. *Competition Law of Canada*. Juris Publishing, Inc., 2013.

⁷⁸ George A. Hay. “Facilitating Practices: The Ethyl Case (1984).” *The antitrust revolution: Economics, competition, and policy* 4 (1999).

⁷⁹ *United States v. Airline Tariff Publishing Company*, 836 F. Supp. 9 (D.D.C. 1993)

⁸⁰ *R. v. Armco Canada Ltd. (No. 2)* (1975) 8 O.R. (2d)

⁸¹ For discussion of examples of facilitating practices and consideration of facilitating practices across jurisdictions, see OECD. “Facilitating Practices in Oligopolies.” Policy Roundtable. Available at <http://www.oecd.org/daf/competition/41472165.pdf>.

⁸² *Id.* at 9.

provided as illustrations of the kinds of digital tools and platforms that may evolve to be areas of concern in antitrust, and should not be read as instances of problematic conduct.

Disclosing a pricing algorithm to competitors, for example, could be seen as akin to distributing a price list to competitors. In some industries, particularly those in which market power is concentrated among a small number of competitors, disseminating pricing information using a digital platform may be viewed as a facilitating practice that leads to higher prices if competitors are able to propose higher prices and gauge a likely competitive response without running the risk of posting higher prices and losing business from being undercut. One example in this area is the case of *United States v. Airline Tariff Publishing Company*, 836 F. Supp, 9 (D.D.C. 1993), where the United States government alleged that several airlines were fixing prices by using a fare dissemination service, which facilitated the rapid sharing of information. While the platform served a legitimate business purpose by informing consumers of fares, it also allegedly allowed airlines to signal upcoming price increases which competitors would follow.

In another example, the Australian Competition and Consumer Commission (ACCC) took action against a price reporting service and four petrol retailers stemming from their use of a price exchange service that updated information on gas prices every 15 to 30 minutes.⁸³ Information was only available to these participants and the adopted resolution to mitigate competition concerns was to make the pricing updates publicly available to consumers and third party organizations for a period of five years. Sharing of information in this manner may be viewed as a facilitating practice, particularly given the frequency and speed of information exchange.

As big data technology continues to evolve, it is difficult to predict the ways in which it may facilitate, or indicate the existence of, anti-competitive agreements or arrangements. Each scenario is case-specific and will depend on the facts in the particular situation. In any event, when firms engage in such practices they run risks, particularly if the outcomes mirror those that would be achieved through collusion. In the context of big data, market players should remain vigilant to ensure that the use of new technology, including algorithms, does not result in anti-competitive conduct. These tools should be designed and implemented with a view to ensuring compliance.⁸⁴

⁸³ The Australian Competition and Consumer Commission Press Release, “Petrol price information sharing proceedings resolved.” Press release, December 23, 2015. Available at <https://www.accc.gov.au/media-release/petrol-price-information-sharing-proceedings-resolved>.

⁸⁴ The European Commissioner of Competition, Margrethe Vestager, has discussed the idea of “compliance by design” and cautioned businesses to ensure that tools like algorithms are built in way that does not allow them to collude (Speech, Bundeskartellamt 18th Conference on Competition, Berlin, 16 March 2017. Available at https://ec.europa.eu/commission/commissioners/2014-2019/vestager/announcements/bundeskartellamt-18th-conference-competition-berlin-16-march-2017_en)

V. Big data and deceptive marketing practices

Informed consumers are necessary for a prosperous and fair economy. Thus, in addition to promoting competitive markets, the Bureau ensures truth in advertising by discouraging *materially* deceptive business practices and by encouraging the provision of sufficient information for consumers to make informed choices. The Bureau’s focus on materiality highlights the importance of the link between the representation and the consumer’s course of conduct.

It bears stating however, that big data holds the promise of delivering value to consumers by allowing them to make more informed choices. For example, by definition, targeted advertising brings information that is more likely to be relevant and useful to consumers. Similarly, geolocation data can allow firms to present consumers with location-specific advertisements. Nevertheless, such innovation should not compromise the consumer’s right to truth in advertising.

Firms engage in deceptive business practices in many contexts and big data is potentially a new one. However, even in this potentially new context, the rules related to misleading advertising apply just as they do in more familiar contexts. Ultimately, while the details may change from case to case, the analysis and motivation for enforcement decisions remain guided by the same overarching principle: firms should not mislead consumers. Consumers are eager to profit from the possibilities created by big data, nonetheless they are also concerned about how their data may be collected and used, especially without their knowledge or consent.⁸⁵ The Bureau seeks to ensure that the advent of big data does not undermine the trust of consumers in the marketplace so that all Canadians can benefit. Firms that collect or use big data should comply with the deceptive marketing provisions of the Act, whenever they *make* a representation or *permit* a representation to be made to promote their products or business interests.

The life cycle of big data can be divided into four phases: 1) collection, 2) compilation and consolidation, 3) analysis, and 4) use.⁸⁶ Consumers are frequently implicated in the first phase of the life cycle—collection—as they sometimes represent the original source of data. Consumers are also implicated at the final phase—use—when firms use big data to promote their products and services. Consumers are less obviously implicated in the second and third phases. This section will follow this

⁸⁵ The collection of personal information intersects with the Office of the Privacy Commissioner’s mandate (“OPC”). The OPC enforces the *Personal Information Protection and Electronic Documents Act* (“PIPEDA”). PIPEDA requires that the purposes for which an individual’s information is to be collected, used or disclosed be explained in a clear and transparent manner. Consent must be obtained before or at the time of collection, or when a new use of personal information has been identified.

⁸⁶ US Federal Trade Commission. “Big Data: A tool for inclusion or seclusion.” FTC Report. January 2016. Available at <https://www.ftc.gov/system/files/documents/reports/big-data-tool-inclusion-or-exclusion-understanding-issues/160106big-data-rpt.pdf>

demarcation and illustrate how deceptive marketing principles apply in deceptive marketing enforcement apply to the collection and use phases separately.

V.A. Collection of data

Advances in information technology are allowing firms to collect large amounts of data from many different kinds of sources. For example, ThomsonReuters provides various types of market data to customers involved in various aspects of finance.⁸⁷ Oil extraction and production firms use detailed geological data developed on tracts they are exploiting to make inferences about the likely productive potential of neighboring tracts.⁸⁸ Google collects data from users that include information provided by users when they sign up (e.g. a name, telephone number) as well as information derived from use of Google services (e.g. device-specific information, location information).⁸⁹

The examples above illustrate some of the many ways in which data may be collected. While in certain instances, data are provided consciously and deliberately by consumers, there are other instances where consumers may not be fully aware of the many types of data they are providing. For example, a number of online services and mobile apps collect data in non-apparent ways; some online services exist only for the purpose of extracting data from consumers.

Deceptive marketing concerns may be prominent in cases where data collection is not noticeable to consumers for at least two reasons. First, this type of collection is incidental to the consumer's main objective when using the service or application. For example, a consumer's main objective in using a flashlight app is to see in the dark; it is not to transmit data. Thus, in generating such data, consumers have their attention elsewhere and may not deploy mechanisms to protect themselves (e.g. price comparisons, research). Second, when companies anticipate the potential to monetize their data, they may choose to collect data that are not related to the functionality on which the consumers are focused. Consumers, by not recognizing this strategy, may not understand the types of data collected or the different ways in which their data can be used.

Firms may collect information from consumers and use this information to market additional products to consumers or they may collect information and resell it to third parties. In both instances, representations regarding the collection of data are made to promote the business interests of the firm collecting the information. The collection of data is, thus, an area where the principles of deceptive

⁸⁷ ThomsonReuters. "Market Data." Available at <https://www.thomsonreuters.com/en/products-services/financial/market-data.html>

⁸⁸ Hendricks, Kenneth, and Robert H. Porter. "An empirical study of an auction with asymmetric information." *The American Economic Review* (1988): 865-883.

⁸⁹ Google. "Welcome to the Google Privacy Policy." Available at <https://www.google.ca/intl/en/policies/privacy/>

marketing are especially relevant. While, historically, the Bureau has mostly reviewed practices where consumers were misled into purchasing a product or service, the era of big data may warrant devoting greater attention to representations that mislead consumers into giving away their information. The next two subsections discuss tactics that firms can use to this end: making false or misleading representations about the type of data collected, the purposes for which the data are collected, how the data will be used, maintained and erased; and failing to adequately disclose information necessary for consumers to make informed choices. These subsections highlight a simple recurring theme in enforcement actions against deceptive marketing practices: firms should not mislead consumers.

V.A.1. False or misleading representations

When firms make false or misleading representations about their collection of data, consumers may be led to provide information that they would not otherwise have provided. Such misrepresentation may pertain to how the data will be used, maintained, shared, and, ultimately, erased.

A relatively straightforward example involves misleading representations in “online lead generation.” Firms use lead generators to identify customers that are likely interested in buying a product or service that they offer. Online lead generation typically begins with consumers filling out a form on a website related to a product or service of interest. Operators of such websites, known as “publishers” or “affiliates,” may then sell information collected from consumers to end-buyers (merchants and advertisers selling products and services) or to larger companies who aggregate this information (aggregators) and then sell it to end-buyers. Affiliates, therefore, benefit when consumers submit information and have an incentive to encourage consumers to do so. Affiliates, and firms in general, should never use deceptive representations to entice consumers into providing information.⁹⁰ For example, consumers shopping for insurance services may fill out a form on a website inviting consumers to “get direct access to all the best rates with us—no intermediaries!,” when, in fact, the operator of the website sells consumers’ information to aggregators who then resell it to insurance providers.

⁹⁰ The United States Federal Trade Commission has been active in pursuing lead generation misrepresentations. For example, they have settled charges that Expand, Inc. deceptively encouraged consumers to apply through its web forms for jobs with multi-national corporations and government agencies when in fact Expand, Inc. was selling consumers’ information to schools and career training programs. (*FTC v. Expand, Inc.*, available at <https://www.ftc.gov/enforcement/cases-proceedings/152-3124/expand-inc-gigats>) Similarly, the FTC has also sued lead generators that attracted consumers with promises of extremely low mortgages rates or free refinancing, but then sold consumers’ information to entities that did not actually offer these deals. (*FTC v. Intermundo Media, LLC*, No. 14-2529 (D. Colo. 2014), available at <https://www.ftc.gov/enforcement/cases-proceedings/122-3225/intermundo-media-llc-delta-prime-refinance>)

For certain consumers, representations about how their data will be handled may be a key factor in their decision to supply their information. Thus, firms’ representations about how data will be maintained, shared, and erased can affect a consumer’s decision to provide information. Put simply, firms should truthfully represent how the data they are collecting will be handled. As an example, the United States Federal Trade Commission took action against Snapchat for representing that “snaps” (photos and video messages sent through its service) would disappear forever after a period chosen by the sender, when in fact recipients could employ several simple methods to save snaps indefinitely.⁹¹

In the context of the Act, concerns may arise when the representations to obtain consent for the collection, use, and disclosure of information are false or misleading in a material respect.

V.A.2. Inadequate disclosure

In addition to truthfully representing what type of data will be collected and how it will be used, maintained and erased, firms should give consumers an opportunity to make an informed choice when they are weighing whether they are willing to have their data collected. In short, firms should disclose the information necessary so that consumers can make informed choices.

Concealment of material information can make representations deceptive. With the ubiquity of information technology, consumers may be unaware of the data they are generating. For example, when using a smart phone to conduct an online search, play a game, or even use a flashlight app, consumers may be generating data such as locational data or data on personal preferences and interests. Firms have strong incentives to collect these data to the extent that they can be monetized. However, such data may be collected from consumers without consumers knowing that their information is being collected, aggregated, and commercialized. Inadequate disclosure of information that is materially important to consumers is a significant competitive concern.

The United States Federal Trade Commission’s action against Goldenshores Technologies is instructive.⁹² Goldenshores Technologies marketed a product as the “Brightest Flashlight Free” mobile application and it was ranked by Google Play as one of the top *free* applications available for download. The application transmitted or allowed transmission of device data, including precise geolocation and information to identify a particular device. The FTC challenged and ultimately settled with the company on the basis of a complaint that the representations were deceptive in not

⁹¹ Federal Trade Commission. “Snapchat Settles FTC Charges That Promises of Disappearing Messages Were False.” Press release. May 8, 2014. Available at <https://www.ftc.gov/news-events/press-releases/2014/05/snapchat-settles-ftc-charges-promises-disappearing-messages-were>

⁹² Federal Trade Commission. “Android Flashlight App Developer Settles FTC Charges It Deceived Consumers.” Press release. December 5, 2013. Available at <https://www.ftc.gov/news-events/press-releases/2013/12/android-flashlight-app-developer-settles-ftc-charges-it-deceived>

disclosing or adequately disclosing that the application transmitted or allowed the transmission of the data to third parties, including advertising networks, these facts being material to a user's decision to install the application.

Fundamentally, companies are putting themselves at risk when they collect information that consumers would not expect to be collected in the normal course of business and only disclose this material information in terms and conditions that are likely to be overlooked by consumers. Consumers form a general impression about the type of data being collected and how their data will be used; companies should ensure that such general impression corresponds with the data being collected and how the data are, in fact, used. The collection and use of data that go beyond what consumers would reasonably expect increases the likelihood of deception.

V.B. Use, maintenance and disposal of data

Firms may sell big data directly to certain companies or use it as some kind of input into a product that is sold to consumers. In cases where firms sell big data directly to companies, deceptive marketing provisions apply directly as they would in the sale of any product or service. This section does not focus on application of deceptive marketing principles in those cases. Instead, this section focuses on instances where firms use big data as an input. It provides a non-exhaustive set of illustrative examples in which big data can be used in this fashion to emphasize that the simple overarching principle of deceptive marketing—that firms should not mislead consumers—applies in a fairly straightforward fashion.

V.B.1. Use of big data to target victims of deception

Perhaps the most prominent application of big data is in developing targeted marketing and advertising. While consumers may benefit from targeted advertising by, for example, gaining access to personalized content and recommendations, targeted advertising can also be used to target consumers who are particularly vulnerable to deceptive practices.

The United States Federal Trade Commission has identified instances where firms use big data to target consumers for deceptive practices. Specifically, Jessica Rich, Director of the Bureau of Consumer Protection at the FTC, has remarked on “The increasing ability of scam artists to purchase detailed information about consumers and use it to perpetrate fraud. The FTC has seen many phantom-debt scams in recent years, in which companies contact consumers who may have applied for payday loans in the past—or even just visited a payday loan site—and demand payment of debts

that don't exist.”⁹³ *FTC v. Stark Law, LLC* is one such scam.⁹⁴ In that case, defendants purchased consumer payday loan information from lead aggregators and used this consumer data to make unauthorized debits from consumers' bank accounts. Consumers can benefit when they provide data for payday loans. For example, providing data may help expedite the approval process and connect consumers with potential lenders. However, consumers do not benefit when unscrupulous firms use these data for illegitimate purposes. Firms may also target victims through means other than the purchase of data. For example, a firm might track a consumer's online browsing history to ascertain whether the consumer has a relationship with a certain bank. Once a relationship is detected, the firm can use that information in a highly targeted “spear phishing” campaign aimed at causing the disclosure of confidential information.⁹⁵

Sections 52, 53, and 74.1 of the Act specifically note that “vulnerability” is an aggravating factor that courts shall consider in sentencing and in determining the amount of an administrative monetary penalty. In this context, the targeting of particularly vulnerable groups of victims, which may be assisted through the exploitation of big data, is directly relevant.

V.B.2. Use of big data to deliver native advertising and engage in astroturfing

Consumers benefit when they can base a purchase decision on impartial and relevant information. It is in this sense that advertising and, more recently, consumer reviews serve an important and beneficial role in the economy. However, when those advertisements or consumer reviews falsely purport to be impartial, consumers can be harmed. The term “astroturfing” has come to refer to the practice of using fake consumer reviews and testimonials to promote a product or business interest.⁹⁶ The term “native advertising” has come to refer to the practice of disguising an advertisement by making it similar to the news, articles, product reviews, or entertainment that consumers are viewing online.⁹⁷ Disguising an advertisement in this way or propagating fake reviews creates an impression of impartiality that is deceptive and harmful to consumers.

⁹³ Jessica Rich. “Big Data: Shining a Light into the Black Box” Speech presented to Public Citizen. May 11, 2015. Available at https://www.ftc.gov/system/files/documents/public_statements/642271/may_11_2015_final_remarks.pdf

⁹⁴ *FTC v. Stark Law, LLC* Available at <https://www.ftc.gov/enforcement/cases-proceedings/152-3243/stark-law-llc-dba-stark-recovery>.

⁹⁵ Spear phishing is the practice of sending emails that appear to come from a known or trusted source in order to induce the recipient to disclose confidential information.

⁹⁶ Competition Bureau. “*The Deceptive Marketing Practices Digest*” Volume 1. Available at [http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/vwapj/cb-digest-deceptive-marketing-e.pdf/\\$FILE/cb-digest-deceptive-marketing-e.pdf](http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/vwapj/cb-digest-deceptive-marketing-e.pdf/$FILE/cb-digest-deceptive-marketing-e.pdf).

⁹⁷ Federal Trade Commission. “*Native Advertising: A Guide for Businesses*” Available at <https://www.ftc.gov/tips-advice/business-center/guidance/native-advertising-guide-businesses>.

Big data and social media may be considered as related phenomena given the large and diverse nature of the data generated by social media users. Firms are increasingly making use of big data and social media, as inputs into marketing campaigns. For example, social media is a major source of information for consumers seeking advice to guide their purchasing decision.⁹⁸ However, the data produced by social media users loses its value when it consists of fake reviews and disguised advertisements. The potential for misrepresentation arises because consumers are likely to attach more weight to a representation if they believe it comes from a friend, an experienced consumer, or an independent researcher. Additionally, firms may format a customized advertisement to match the style or layout of the website. Such formatting can prevent consumers from recognizing the provenance of the message and mislead consumers into believing that the message originates from a trusted source.

On the bright side, innovative firms have emerged to provide consumers with tools to detect fake reviews. For instance, some websites allow consumers to paste the link of a product to determine the validity of the product's reviews and to adjust the product rating accordingly.

Astroturfing and native advertising are emerging issues where the overarching principles of deceptive marketing—that consumers should not be misled—apply directly. Firms should adequately disclose who is making the representation or on whose behalf the representation is made.

V.B.3. Use of big data to validate performance claims

Similar to advertisements or reviews, consumers benefit from relevant and impartial performance claims about products they are considering buying. However, the asymmetry in knowledge between the consumer and the entity making the claims forces consumers to trust the representations made to be fair and accurate. This dynamic underscores the importance of the performance claim provision included in the Act.⁹⁹

Traditionally, there are well-known third-party organizations that test products and publicly disseminate the results of their tests. Those organizations tend to vigilantly protect their reputation for impartiality in numerous ways. For example, some may limit the advertisements they accept or may not accept advertisements at all.

More recently, however, third-party organizations are providing data as a way for firms to make performance claims about their own products. For example, the company OpenSignal provides coverage and performance reports for cellular telephone networks based on crowdsourced data

⁹⁸ Competition Bureau. "Too good to be true: Don't buy into online fake review" Press Release. March 10, 2105. Available at <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/03882.html>.

⁹⁹ To comply with the Act, performance claims must be supported by adequate and proper testing.

collected through a mobile app. In the United States, T-Mobile relied on this crowdsourced data to claim that its network was faster than its competitors.¹⁰⁰ More generally, the emergence of the “Internet of Things” may lead to a broader use of performance claims derived from third-party data. For example, users of Wi-Fi connected home appliances may be able to test the energy efficiency of their appliances. Companies that sell such appliances may obtain these data from third parties to promote their products.

Performance claims must be supported by adequate and proper testing. The Act is drafted in a way that ensures that there is flexibility in terms of what constitutes an adequate and proper test, meaning that the Act does not refer to a strict predetermined standard, but rather allows for the test to be determined according to context. Specifically, the hallmarks of an adequate and proper test include the following:¹⁰¹

- The test depends on the general impression that the claim makes on consumers,
- The test is conducted before the claim is made,
- The test is conducted under controlled circumstances so that external influences can be removed,
- The test procedure minimizes subjective judgment,
- The test should establish that the results are not mere chance or a one-time effect, and
- The claim is supported by the results of the testing.

Some of these hallmarks may be difficult to achieve with information sourced from big data. For instance, a crowd-sourced performance claim may not have been tested under controlled circumstances so that the influence of all external influences have been removed. Nevertheless, the Act provides flexibility to assess performance claims so that the focus can be on the most important question: are the representations supported by adequate and proper testing?

V.B.4. Use of big data to validate ordinary selling price claims

Consumers react to how prices are framed. For example, an item advertised as Regular price \$100 – Sale price \$50” can elicit a different reaction from consumers than an item sold for the same price

¹⁰⁰ T-Mobile. “T-Mobile’s Network Cleans Up in Latest OpenSignal Report.” February 8, 2017. Available at <https://newsroom.t-mobile.com/news-and-blogs/opensignal-2017.htm>

¹⁰¹ Competition Bureau. “*The Deceptive Marketing Practices Digest*” Volume 2. Available at [http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/vwapj/cb-digest-deceptive-marketing-vol-2-e.pdf/\\$file/cb-digest-deceptive-marketing-vol-2-e.pdf](http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/vwapj/cb-digest-deceptive-marketing-vol-2-e.pdf/$file/cb-digest-deceptive-marketing-vol-2-e.pdf)

without a claim about a reduction from a regular price.¹⁰² Specifically, consumers can be receptive to claims about savings and may judge the value of a deal based on the deviation from a reference price.

The Bureau’s approach to representations about reference prices, such as ordinary selling prices, is described in its enforcement guidelines.¹⁰³ In short, claims about an ordinary selling price should be substantiated by one of two tests: either a substantial volume of the product was sold at that ordinary (or a higher) price within a reasonable time period; or the product was offered for sale, in good faith, for a substantial period of time at that ordinary (or a higher) price.

Advancements in information technology are now allowing companies to track and store information about products advertised online. As such, companies may find it in their interests to leverage these data and promote their products using ordinary selling price representations such as “save 30% off the regular market price” or “save 30% off our competitors’ prices.”

Ultimately, it is the companies’ responsibility to ensure that their claims and the data relied on to make their claims are accurate. In fact, failing to verify that reference prices are accurate may raise concerns under the Act. For example, the Bureau recently settled a case with Amazon.com.ca Inc., which focused on Amazon’s practice of comparing its prices to a regular price, or “list price”—thereby signaling attractive savings for consumers. The Bureau’s investigation concluded that these claims created the impression that prices for items offered on www.amazon.ca were lower than prevailing market prices. Amazon had relied on its suppliers to provide list prices without verifying that those prices were accurate.¹⁰⁴ The same rules apply in the context of big data. Companies should use caution when promoting their products using market price claims derived from analysis of data as verifying the accuracy of the data may be challenging.

V.B.5. Use of big data to make predictions about when to purchase

When consumers are considering a major purchase, they may benefit when they make the purchase at the right *time*. For example, the prices of vacation packages and major home appliances can vary considerably over time so that consumer savings can be considerable if the purchase is made when prices are relatively low.

¹⁰² The importance of “framing” has been extensively researched and shown in laboratory experiments as well as with observational data. For example, *see* Stefano DellaVigna. “Psychology and economics: Evidence from the field.” *Journal of Economic Literature* 47, no. 2 (2009): 315-372.

¹⁰³ Competition Bureau. “Ordinary Price Claims: Subsections 74.01(2) and 74.01(3) of the Competition Act.” October 16, 2009. Available at <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/03125.html>.

¹⁰⁴ Competition Bureau. “Amazon changes pricing practices and pays \$1.1 million to settle price advertising case.” Press Release, January 11, 2017. Available at <https://www.canada.ca/en/competition-bureau/news/2017/01/amazon-changes-pricing-practices-pays-1-1-million-settle-price-advertising-case.html>.

Traditional buying calendars provide information on the times of the year when consumers can typically expect to find the best prices on various products. For example, Consumer Reports claims to “have found that deep discounts for many products are still tied to a particular month of the year” and provides a timetable of when particular products go on sale.¹⁰⁵

In addition to these traditional methods, new business models are emerging to satisfy consumers’ demand for buying calendars updated with real-time information. Certain companies already make predictions regarding the best time to buy plane tickets using historical data, consumer queries, and online price information.

Such services can provide valuable information to consumers. Nevertheless, in the same way that firms are responsible for the claims they make about ordinary selling prices, firms offering a service that suggests a time to buy must also ensure that their representations are truthful and do not convey a general impression that is false or misleading. For example, firms should not take advantage of consumers by using a deceptive “scarcity marketing” technique to encourage quick decisions and discourage comparison shopping. The Bureau has already taken issue with representations that create a false sense of urgency or limited supply.¹⁰⁶

VI. Conclusion

This paper was developed in response to changes in technology that have allowed new business practices to emerge. The diversity of these business practices, while already substantial, may very well grow in the future. That growing diversity will likely continue to intersect with competition enforcement in complex ways so that different big data applications will give rise to distinct issues. The application of the Act must remain case-specific if the risk of applying the wrong approach to a new situation is to be minimized. Along with this important proviso, a fundamental conclusion of this paper is that by explicitly recognizing these new business practices, competition enforcement is well positioned to continue to serve its valuable role.

¹⁰⁵ Consumer Reports. “Best Time to Buy Things.” Consumerreports.org. <http://www.consumerreports.org/cro/money/best-time-to-buy-things/index.htm>

¹⁰⁶ Competition Bureau. “Competition Bureau sues HBC over alleged deceptive regular price claims and clearance sales.” Press Release. February 22, 2017. Available at https://www.canada.ca/en/competition-bureau/news/2017/02/competition_bureausueshbcverallegeddeceptiveregularpriceclaimsa.html