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ALGORITHMIC PERSONALIZED PRICING

PASCALE CHAPDELAIN\*

*Price is an essential term at the heart of supplier-consumer transactions and relationships increasingly taking place in “micro-marketplace chambers,” where points of comparison with similar relevant products may be difficult to discern and time-consuming to make. This article critically reviews recent legal and economic academic literature, policy reports on algorithmic personalized pricing (i.e. setting prices according to consumers’ personal characteristics to target their willingness to pay), as well as recent developments in privacy regulation, competition law, and policy discourse, to derive the guiding norms that should inform the regulation of this practice, predominantly from a consumer protection perspective. Looking more closely at algorithmic personalized pricing through prevailing and conflicting norms of supplier freedom, competition, market efficiency, innovation, as well as equality, fairness, privacy, autonomy, and transparency, raises important concerns about certain forms of algorithmic personalized pricing. This article provides parameters to delineate when algorithmic personalized pricing should be banned as a form of unfair commercial practice. This ban would address the substantive issues that algorithmic personalized pricing raises. Resorting to mandatory disclosure requirements of algorithmic personalized pricing would address some of the concerns at a procedural level only, and for this reason is not the preferred regulatory approach. As such, our judgment on the (un)acceptability of algorithmic personalized pricing as a commercial*

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\* Associate Professor, Faculty of Law University of Windsor, (L.L.B., B.C.L., LL.M., Ph.D.). I thank Margaret Jane Radin, Anthony Duggan, Rory Van Loo, Jakob Metzger, and Maureen Irish, for their comments on earlier versions of this article, as well as the participants of the Expert Panel and Workshop “E-commerce, Algorithms, Big Data, Consumer Deception and Protection” (Windsor Law, February, 2019), and of the International Association of Consumer Law Conference (Indianapolis, June 2019) and of the Commercial Law Symposium (Windsor Law, October 2019). Thanks to the University of Windsor Faculty of Law for research grants making this publication possible, to Shahnaz Dhanani and Andrew Gould for excellent research assistance, and to the team at NYU Journal of Law & Business for great editorial work.

*practice is a litmus test for how we should regulate the indiscriminate extraction and use of consumer personal data in the future.*

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#### INTRODUCTION: WHAT'S WRONG WITH ALGORITHMIC PERSONALIZED PRICING?

The online commercial experience is highly personalized. Targeted advertising, search engine results, and movie suggestion lists are based on the collection and use of consumer personal data to predict and increasingly shape consumers' preferences and purchasing behavior.

Getting to the terms that actually dictate a commercial relationship between suppliers and consumers, the extent to which personal data is used to differentiate the prices at which goods or services are offered to consumers is less clear. Anecdotal accounts of personalized pricing abound: airline ticket purchases, hotel room bookings, and purchases on digital marketplace platforms such as Amazon.<sup>1</sup> While there is a cloud of uncertainty around the pricing mechanisms at play to explain such differential prices, studies point toward a strong aversion to personalized pricing among consumers.<sup>2</sup>

Price is the single most important term of most consumer transactions. *Algorithmic personalized pricing*, as a specific form of discriminatory pricing, comprises any commercial practice setting prices according to consumers' personal characteristics to target as closely as possible their willingness to pay.<sup>3</sup> Price is also at the heart of supplier-consumer relationships in "micro-marketplace chambers," where points of comparison between similar relevant products may be increasingly hard to discern and time consuming to make. As such, our judgment on algorithmic personalized pricing as an (un)acceptable commercial practice is a litmus test for how we should regulate the indiscriminate extraction and uses of consumer personal data in commerce in the future.

The malleability of price through the use of consumer personal data involves many areas of law and policy: antitrust, competition, privacy, contract, consumer protection, and anti-discrimination.

Algorithmic personalized pricing is receiving growing attention in economic and legal literature.<sup>4</sup> Notably, the Organi-

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1. See DIRECTORATE FOR FIN. & ENTER. AFF. COMPETITION COMM., OECD, PERSONALIZED PRICING IN THE DIGITAL ERA—BACKGROUND NOTE BY THE SECRETARIAT 16 (2018), [https://one.oecd.org/document/DAF/COMP\(2018\)13/en/pdf](https://one.oecd.org/document/DAF/COMP(2018)13/en/pdf) [hereinafter OECD COMPETITION COMMITTEE] (summarizing recent accounts of consumer experiences of personalized pricing documented in the literature, often negated by suppliers, including Amazon selling products to regular consumers at higher prices, that was uncovered when computer cookies were deleted causing a drop in those prices).

2. See *infra* Part IV.

3. See *infra* Part I.

4. See, e.g., ARIEL EZRACHI & MAURICE STUCKE, VIRTUAL COMPETITION (2016); Oren Bar-Gill, *Algorithmic Price Discrimination When Demand is a Function of Both Preferences and (Mis)perceptions*, 86 U. CHI. L. REV. 217 (2019); Inge Graef, *Algorithms and Fairness: What Role for Competition Law in Targeting Price*

zation for Economic Co-operation and Development (OECD) issued an extensive report on the topic in 2018, gathering research and data from several governments and non-governmental organizations.<sup>5</sup> Looking at this commercial practice through traditional bodies of law and economic principles, commentators so far have been prudent and reserved concerning the acceptability of algorithmic personalized pricing, making no decisive conclusion about what proper regulatory frameworks should be in place.

This article critically reviews recent legal and economic academic literature and policy reports on algorithmic personalized pricing, as well as recent developments of privacy regulation, competition law, and policy discourse, to derive the guiding norms that should inform the regulation of algorithmic personalized pricing, predominantly from a consumer protection standpoint. Closely examining algorithmic personalized pricing through prevailing discursive norms of supplier freedom, competition, market efficiency, innovation, equality, fairness, privacy, autonomy, and transparency raises important concerns about certain forms of algorithmic personalized pricing that have been overlooked and that merit closer regulatory scrutiny. The detailed normative analysis conducted in this article provides a rationale to delineate when algorithmic personalizing pricing should be banned as a form of unfair commercial practice violating privacy norms. This ban would address the substantive issues that algorithmic personalized pricing raises. Resorting to mandatory disclosure re-

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*Discrimination Towards End Consumers?*, 24 COLUM. J. EUR. L. 541 (2017); Akiva Miller, *What Do We Worry About When We Worry About Price Discrimination? The Law and Ethics of Using Personal Information for Pricing*, 19 J. TECH. L. & POL'Y 41 (2014); Christopher Townley, Eric Morrison & Karen Yeung, *Big Data and Personalized Price Discrimination in EU Competition Law*, 36 Y.B. EUR. L. 683 (2017); Gerhard Wagner & Horst Eidenmüller, *Down by Algorithms? Siphoning Rents, Exploiting Biases, and Shaping Preferences: Regulating the Dark Side of Personalized Transactions*, 86 U. CHI. L. REV. 581 (2019); Frederik Zuiderveen Borgesius & Joost Poort, *Online Price Discrimination and EU Data Privacy Law*, 40 J. CONSUMER POL'Y 347 (2017).

5. See OECD, PERSONALIZED PRICING IN THE DIGITAL ERA (2018), <http://www.oecd.org/daf/competition/personalised-pricing-in-the-digital-era.htm> (detailing reports and analyses by OECD and 11 non-governmental organizations and participating countries, including: the European Union, Hungary, Mexico, Netherlands, Portugal, the Russian Federation, Spain, the United Kingdom and the United States).

quirements of algorithmic personalized pricing would not address the concerns raised by the practice at a substantive level and, for this reason, should not be the preferred regulatory approach.

Part I of this article further defines algorithmic personalized pricing by situating it among various forms of discriminatory pricing described in economic theory. Part II queries the extent to which algorithmic personalized pricing exists, as well as the regulatory challenges posed by the opacity of this commercial practice. Part III discusses the type of personal data that are used by suppliers and the (ir)relevance of the public or private nature of such data. Part IV explores consumers' low level of acceptance of personalized pricing. Part V looks at the prevailing norms regarding algorithmic personalized pricing and at how they relate to one another: supplier freedom, competition, market efficiency, equality, fairness, privacy, autonomy, and transparency—showing areas of concerns for consumers with respect to certain forms of personalized pricing. Part VI looks at various regulatory avenues and argues in favor of a ban to address the substantive issues raised by certain forms of algorithmic personalized pricing, while arguing against mandatory disclosure requirements for failing to address those substantive issues. It also looks at other regulatory approaches and at the consequences of maintaining the status quo with no specific regulatory intervention, relying on existing bodies of law. The article concludes with further areas of inquiry and study surrounding the use of consumer personal data in e-commerce.

## I.

### DISCRIMINATORY PRICING AND ALGORITHMIC PERSONALIZED PRICING

The exercise of some form of discrimination in pricing strategies is not a new phenomenon.<sup>6</sup> “First-degree price dis-

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6. See Andrew Odlyzko, *Privacy, Economics, and Price Discrimination on the Internet*, in ICEC2003: FIFTH INTERNATIONAL CONFERENCE ON ELECTRONIC COMMERCE 355, 362 & fol. (N. Sadeh ed., 2003) (comparing the 19th century railway industry in the US, in which companies exercised a high degree of price discrimination, with digital products supplied over the internet, pointing out the similarity of the two environments—i.e., high initial fixed costs and low marginal costs, creating an incentive to exercise price discrimination).

crimination,” or “perfect price discrimination,” refers to an ideal or theoretical type of price discrimination whereby a supplier is able to determine at an individual level, through use of detailed personal information, the highest price that a consumer is willing to pay (the “reservation price”) and then offers a good or service individually priced to each consumer.<sup>7</sup> It is an ideal for suppliers in that, if achieved, it maximizes suppliers’ profits by reaching each consumer’s maximum willingness to pay without any remaining consumer surplus. Obviously, this theoretical ideal is “perfect” for one side of the bargain. There are technical and practical considerations concerning the likelihood that first-degree price discrimination is or will be occurring. We explore this further below in this article.<sup>8</sup>

“Second-degree price discrimination,” also referred to as “versioning,” occurs when a supplier offers different prices for different versions of a good or service such as add-ons, different usage durations, or quality levels.<sup>9</sup> Here, the discrimination is exercised in relation to the nature of the good or service and is not based on the consumer’s personal characteristics and information per se (although suppliers may personalize their “versioning” or product options offered based on the consumer). In the online world, versioning of products makes price offerings more complex with economic studies showing that suppliers exploit biases to steer buyers toward certain price points.<sup>10</sup> As Ezrachi & Stucke explain, more complex product offerings require more investment in time for buyers (or “search costs”), making consumers less inclined to look for prices elsewhere; such exercise of comparison might be futile as measuring one complex offering against

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7. See OECD COMPETITION COMMITTEE, *supra* note 1, at 9; EZRACHI & STUCKE, *supra* note 4, at 89; Miller, *supra* note 4, at 55; Townley, Morrison & Yeung, *supra* note 4, at 689–90; Zuiderveen Borgesius & Poort, *supra* note 4, at 350–53 (summarizing the three common types of price discrimination).

8. See *infra* Part III.

9. OECD COMPETITION COMMITTEE, *supra* note 1, at 9; Miller, *supra* note 4, at 55; Townley, Morrison & Yeung, *supra* note 4, at 689.

10. EZRACHI & STUCKE, *supra* note 4, at 108–09; Miller, *supra* note 4, at 65 (describing the practice of offering deliberately poor-quality goods to most price-sensitive consumers and inducing higher-end buyers to opt for product options at higher price points).

others may be harder to decipher.<sup>11</sup> This creates a cognitive overload that suppliers may exploit to their advantage.<sup>12</sup>

“Third-degree price discrimination,” or “group pricing,” occurs when suppliers charge different prices to different groups of consumers based on a common characteristic they share (e.g., age, gender, student status).<sup>13</sup> Discount coupons offered to a targeted group sharing a common characteristic fall into this category.<sup>14</sup> Although the discrimination is based on at least one personal attribute of the consumer, it remains removed from first-degree perfect price discrimination discussed above to the extent that group pricing offers preferential treatment to one group based on loyalty considerations or socioeconomic factors and is not specifically aimed at reaching a consumer’s reservation price.

“Algorithmic personalized pricing,”<sup>15</sup> the focus of this article, refers broadly to any practice setting prices according to consumer personal characteristics, targeting as closely as possible their willingness to pay.<sup>16</sup> While perfect personalized pricing would generally be associated with first-degree price discrimination,<sup>17</sup> some commentators opine that online personalized pricing is better characterized as third-degree price discrimination, i.e. creating groups from a varying degree of

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11. Rory Van Loo, *Helping Buyers Beware: The Need for Supervision of Big Retail*, 163 U. PA. L. REV. 1311, 1329 (2015) (describing how more complex product offerings and options online make it more difficult to compare products online); EZRACHI & STUCKE, *supra* note 4, at 108–09; SICILANI, RIEFA & GAMPER, *infra* note 114, at 13–14, 87–88. See also Miller, *supra* note 4, at 62, 64–65.

12. EZRACHI & STUCKE, *supra* note 4, at 109.

13. OECD COMPETITION COMMITTEE, *supra* note 1, at 9. See also Miller, *supra* note 4, at 55; Townley, Morrison & Yeung, *supra* note 4, at 690.

14. OECD COMPETITION COMMITTEE, *supra* note 1, at 11; Kashmir Hill, *How Target Figured Out A Teen Girl Was Pregnant Before Her Father Did*, FORBES (Feb. 16, 2012), <http://www.forbes.com/sites/kashmirhill/2012/02/16/how-target-figured-out-a-teen-girl-was-pregnant-before-her-father-did/#4e4def1434c6> (well-known case of Target department store estimating probability of pregnancy among women and sending coupons of baby products accordingly).

15. Also referred to as “differential pricing,” see EZRACHI & STUCKE, *supra* note 4, at 85–86.

16. OECD COMPETITION COMMITTEE, *supra* note 1, at 9; EZRACHI & STUCKE, *supra* note 4, at 85–86.

17. See, e.g., Miller, *supra* note 4, at 55.



personal characteristics.<sup>18</sup> So far, the premise has been that “true” first-degree price discrimination remains a theoretical concept that is almost impossible to achieve in practice at this point in time. As such, algorithmic personalized pricing should be understood as a practice oscillating between near first-degree and third-degree price discrimination, and that can also occur with respect to second-degree price discrimination, each time with various levels of consumer personalized segmentation occurring.

Algorithmic personalized pricing as a discriminatory pricing practice needs to be distinguished from “price steering” and “targeted advertising,” where supplier algorithms will take into account consumer personal characteristics and in a sense exercise some form of discrimination, not on the price *per se*, but on the order with which product offers are listed or advertised for a specific consumer.<sup>19</sup> Algorithmic personalized pricing also needs to be distinguished from “dynamic pricing,” where prices fluctuate based on offer and demand rather than by discriminating price offers based on an individual’s personal characteristics.<sup>20</sup> Given the opacity regarding pricing methods and techniques and the difficulty to detect what may amount to dynamic pricing or personalized pricing practices, the line between the two may be blurry at times.<sup>21</sup>

With respect to these various price discrimination practices, Ezrachi & Stucke refer to “behavioral discrimination,” according to which suppliers exploit known biases about consumers to their advantage, be it consumers’ (lack of) patience,<sup>22</sup> consumers’ cell phone power levels,<sup>23</sup> and, more

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18. Townley, Morrison & Yeung, *supra* note 4, at 690.

19. OECD COMPETITION COMMITTEE, *supra* note 1, at 9–10; *see also* EZRACHI & STUCKE, *supra* note 4, at 107–08.

20. OECD COMPETITION COMMITTEE, *supra* note 1, at 9; EZRACHI & STUCKE, *supra* note 4, at 87–88.

21. EZRACHI & STUCKE, *supra* note 4, at 87–88.

22. *Id.* at 110–11.

23. Arwa Mahdawi, *Is Your Friend Getting a Cheaper Uber Fare Than You Are?*, THE GUARDIAN (Apr. 13, 2018, 12:39 PM), <https://www.theguardian.com/commentisfree/2018/apr/13/uber-lyft-prices-personalized-data> (reporting that an Uber behavioral economist was making a correlation between users’ willingness to pay more when phone power was diminishing, however not directly admitting that Uber was using that information to charge higher prices).

generally, various forms of online tactics as a means to get closer to a consumer's reservation price.<sup>24</sup>

## II.

### PERSONAL DATA USED

In the last decades, an entire economy has developed around the extraction of personal data for the purpose of perfecting the predictability of consumer behavior—"[d]ata is the new oil."<sup>25</sup> This massive extraction goes way beyond the collection of personal data for the purpose of service delivery and service improvement that directly benefit consumers. This has been referred to as "behavioral surplus."<sup>26</sup> Initially developed to improve the quality of targeted advertising and online advertising revenues,<sup>27</sup> the powerful algorithm-enabled data extraction and predictive analytics continually improve through machine learning and exponential online traffic. The end goal of consumer data analytics is to find the optimal time, location, and manner to intervene or influence, modify even, consumer behaviors to the benefit of suppliers.<sup>28</sup> While the battle for consumers' attention in advertising continues,<sup>29</sup> this increasingly sophisticated personal data extraction is not confined to advertisement purposes—it is of direct benefit to any firm having an interest in purchasing or accessing probabilistic information about consumer behavior.<sup>30</sup>

In the context of algorithmic personalized pricing, one person's entire online digital footprint becomes relevant to as-

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24. EZRACHI & STUCKE, *supra* note 4, at 101–16.

25. Coined phrase attributed to Clive Humby, UK Mathematician and architect of Tesco's Clubcard, 2006. For a critique of this analogy from a regulatory perspective, see Lauren Henry Scholz, *Big Data is Not Big Oil: The Role of Analogy in the Law of New Technologies*, 86 Tenn. L. Rev. 863 (2020).

26. SOSHANA ZUBOFF, *THE AGE OF SURVEILLANCE CAPITALISM* 8, 63–97 (2019).

27. *Id.* at 74–82 (describing how, in the early 2000s, Google created new algorithms protected by patents that tapped into detailed personal data available through users' search engine functions to develop a profitable business model based on increasing advertising revenues).

28. *Id.* at 19, 78.

29. See TIM WU, *THE ATTENTION MERCHANTS: THE EPIC SCRAMBLE TO GET INSIDE OUR HEADS* 5–7 (2016) (detailing how society has arrived at a point where every part of our lives is commercialized, through the impressive ascension within the last century of the industry of "Attention Merchants").

30. ZUBOFF, *supra* note 26, at 96.

sessing a consumer's willingness to pay. This footprint includes commercial transactions, lifestyle, habits, hobbies, preferences, social networks, and work platforms. All those spheres are indiscriminately morphed into a large pool of data, granting access to the most secret corners of consumers' existence, unknown even to the customers themselves.<sup>31</sup> Under the guise of convoluted standard terms of use nobody reads but "agrees to," and often soft privacy laws with limited regulatory oversight, the collection of big data has quickly become one of the largest forms of extraction with the lowest public regulatory oversight.<sup>32</sup>

In a comprehensive study on personalized pricing, an OECD Competition Committee report listed three categories of personal data available to or extrapolated by data analytics intermediaries and suppliers.<sup>33</sup> There is (i) "volunteered data" (name, phone number, email address, date of birth, address for delivery, responses to surveys, professional occupation, level of education ) (ii) "observed data" (IP address, operation system, past purchases, website visits, speed of clicks, user location, search history, "likes" in social networks), and (iii) "inferred data" (income, health status, risk profile, responsiveness to ads, consumer loyalty, political ideology, behavioral bias, hobbies).<sup>34</sup> Relevant to personalized pricing is the reuse of any

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31. See, e.g., James Carmichael, *Google Knows You Better Than You Know Yourself*, THE ATLANTIC (Aug. 19, 2014), <https://www.theatlantic.com/technology/archive/2014/08/google-knows-you-better-than-you-know-yourself/378608/>; Bar-Gill, *supra* note 4, at 231 (referring to documented practices by Facebook and Google utilizing large amounts of data accessible to them to implement "cognitive" services, which can be either used directly by Facebook and Google or offered to third parties).

32. FRANK PASQUALE, *THE BLACK BOX SOCIETY: THE SECRET ALGORITHMS THAT CONTROL MONEY AND INFORMATION* 3–4 (2015); MARGARET JANE RADIN, *BOILERPLATE: THE FINE PRINT, VANISHING RIGHTS, AND THE RULE OF LAW* 19–51 (2013) (describing why we do not read standard terms of use, and the normative and democratic degradation that ensue from the widespread use of "boilerplates"); Karlin Lillington, *Ban All Indiscriminate Data Gatherings*, IRISH TIMES (Nov. 7, 2019), <https://www.irishtimes.com/business/technology/karlin-lillington-ban-all-indiscriminate-data-gathering-1.4074670>.

33. OECD COMPETITION COMMITTEE, *supra* note 1, at 11. See also EXEC. OFF. OF THE PRESIDENT OF THE U.S., *BIG DATA AND DIFFERENTIAL PRICING* 8–9 (2015), [https://obamawhitehouse.archives.gov/sites/default/files/whitehouse\\_files/docs/Big\\_Data\\_Report\\_Nonembargo\\_v2.pdf](https://obamawhitehouse.archives.gov/sites/default/files/whitehouse_files/docs/Big_Data_Report_Nonembargo_v2.pdf) [hereinafter US PRESIDENT EXECUTIVE OFFICE].

34. OECD COMPETITION COMMITTEE, *supra* note 1, at 11.

combination of such personal data that will enable the development of a profile of purchasing behavior and power, be it of returning customers on a dedicated retailer web platform, or through website visits (through the consumer's IP address or cookies gathering a digital trail of a consumer's online behavior).<sup>35</sup> This includes drawing distinctions about price sensitivity between the "lazy" fidelity consumer who does not shop around and the active shopper navigating back and forth between websites.

Much of the personal data which data analytics intermediaries and suppliers extract and process to predict and influence consumer behavior comes from one of three sources: (1) information made voluntarily available by consumers in specific contexts (i.e. an online purchase); (2) information submitted freely and which becomes (semi)-publicly available (e.g., Facebook "likes"); and (3) information made available to data analytics firms allegedly allowed through the obscure terms of service that people tend not to read but seem to agree to anyways. However, personal data is also collected specifically through Facebook and the Facebook privacy terms that allowed this have been alleged to be misleading and deceptive in a complaint by the Federal Trade Commission against Facebook.<sup>36</sup>

There exists a huge gap between consumers' reasonable expectation of how their personal data will be used and how such personal data is actually used, by the entity collecting the data and by third parties. This knowledge gap also illustrates the lack of control consumers have over the use of their personal data online. There is often no option to prevent personal data from being used beyond a specific purpose, other than by not using the app or social media platform altogether. Movements toward regaining more control over consumers'

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35. Zuiderveen Borgesius & Poort, *supra* note 4, at 350. *See also* Townley, Morrison & Yeung, *supra* note 4, at 684; Miller, *supra* note 4, at 49–54.

36. Complaint ¶ 9,23,48, United States v. Facebook, No. 19-cv-2184 (D.D.C. filed July 24, 2019) [hereinafter US Complaint]. Facebook agreed to pay a fine of US \$5 billion and to take various remedial actions in settlement of US Complaint, having allegedly resorted to misleading and deceptive information regarding users' privacy settings. *See* Settlement Order, United States v. Facebook, No. 19-cv-2184, 2020 WL 1975785 (D.D.C. Apr. 23, 2020).

personal data, returning to a decentralized web,<sup>37</sup> and regulatory responses to that effect such as the EU GDPR<sup>38</sup> and California Consumer Privacy Act of 2018,<sup>39</sup> flow directly from this growing concern.

### III.

#### REQUIRED CONDITIONS FOR ALGORITHMIC PERSONALIZED PRICING TO OCCUR

International organizations, government offices and agencies, and scholars that have studied algorithmic personalized pricing closely are prudent on their pronouncement of the extent to which algorithmic personalized pricing is occurring.<sup>40</sup> This guarded approach is puzzling given growing signs of algorithmic personalized pricing practices taking place, while at the same time, not too surprising. First, algorithmic personalized pricing is difficult to detect. Second, as discussed in this part, economic theory has traditionally set important preconditions for personalized pricing to occur. However, the rapidly improving behavioral predictive ability of machine-learning tools, and the profound mutation of the online marketplace environment, demand that we revisit traditional economic as-

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37. See, e.g., Ruben Verborgh, *How We Regain Control of Personal Data: A Return to a Decentralized Web*, TOWARDS DATA SCI. (Aug. 28, 2019), <https://towardsdatascience.com/ruben-verborgh-on-data-privacy-accf91d280c9>.

38. Regulation 2016/679, of the European Parliament on the Protection and Free Movement of Personal Data on General Data Protection Regulation, 2016 O.J. (L 119) 1 [hereinafter EU GDPR].

39. California Consumer Privacy Act of 2018, CAL. CIV. CODE §§1798.100–1798.199 [hereinafter CCPA].

40. See, e.g., OECD Competition Committee, *supra* note 1, at 14–16; US PRESIDENT EXECUTIVE OFFICE, *supra* note 33, at 10–13; EUR. COMM., CONSUMER MARKET STUDY ON ONLINE MARKET SEGMENTATION THROUGH PERSONALISED PRICING/OFFERS IN THE EUROPEAN UNION (2018), [https://ec.europa.eu/info/sites/info/files/aid\\_development\\_cooperation\\_fundamental\\_rights/aid\\_and\\_development\\_by\\_topic/documents/synthesis\\_report\\_online\\_personalisation\\_study\\_final\\_0.pdf](https://ec.europa.eu/info/sites/info/files/aid_development_cooperation_fundamental_rights/aid_and_development_by_topic/documents/synthesis_report_online_personalisation_study_final_0.pdf) (detailing a study covering all EU Member States, Iceland and Norway, Dec. 2016 to Nov. 2017, pointing to evidence of personalized offers (i.e. selected advertising) but not of personalized pricing per se); Zuiderveen Borgesius & Poort, *supra* note 4, at 348–50; Wagner & Eidenmüller, *supra* note 4, at 586 (pointing to a lack of empirical evidence about algorithmic personalized pricing (first degree priced discrimination), but also to several incentives for the practice which may indicate the practice will increase in the future).

assumptions about personalized pricing and the extent to which the practice may be taking place.<sup>41</sup>

Customer anecdotes, reports, and empirical studies show signs of algorithmic personalized pricing taking place—Amazon selling products to regular customers at higher prices than to others, Uber charging different rates for the same route at the same time of day, businesses' self-declared practices (e.g., airline companies personalizing baggage fees to increase profits), or brick and mortar stores personalizing price offerings to in-store consumers by scanning their cellphones,<sup>42</sup> and are well-documented by business and economic literature.<sup>43</sup> Specific empirical studies point to personalized pricing taking place.<sup>44</sup> The emergence of intermediaries collecting and sell-

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41. Khan, *infra* note 90, 763–64 (on Amazon's ability to practice personalized pricing, including first-degree price discrimination).

42. Bar-Gill, *supra* note 4, at 218 (referring to British company B&Q, having tested in its stores price tags that interface with customers' phones and adjust display prices based on consumers' loyalty data and spending trends).

43. EZRACHI & STUCKE, *supra* note 4, at 89–94; OECD COMPETITION COMMITTEE, *supra* note 1, at 16. The latter summarizes recent consumer reporting of experiences of personalized pricing, often negated by suppliers, documented in the literature: Amazon selling products to regular consumers at higher prices uncovered by deleting cookies on computer to cause drop in those prices; ZipRecruiter's (an online employment recruiter) 2015 experiment with algorithmic pricing based on customer data which resulted in 85% profit increase; online platform Coupons.com reporting in 2016 on use of proprietary data on consumer behavior to target digital coupons to consumers; airline AirAsia Bhd testing in 2017 personalized baggage pricing to increase revenues, using big data and AI tools to better understand what passengers were prepared to pay; consumers reporting in 2018 that Uber charges different prices for rides involving the same route at the same time of day. *See also* Bar-Gill, *supra* note 4, at 225–26 (citing study that showed that Apple iOS and Safari users are occasionally shown higher prices for the same product).

44. *See, e.g.*, Aniko Hannak et al., Measuring Price Discrimination and Steering on E-Commerce Websites, Paper Delivered at the 2014 Internet Measurement Conference (Nov. 5–7, 2014), [https://www.ftc.gov/system/files/documents/public\\_comments/2015/09/00011-97593.pdf](https://www.ftc.gov/system/files/documents/public_comments/2015/09/00011-97593.pdf) (detailing an empirical study of 300 consumers visiting 16 popular websites, and also creating fake accounts to track different patterns, pointing to evidence of personalized pricing); OECD COMPETITION COMMITTEE, *supra* note 1, at 14–16 (referring to a survey by Deloitte that involved over 500 companies, a consumer survey of the European Commission, a 2012 Wall Street Journal investigation, and a 2012 The New York Times investigation). *See also* DELOITTE DIG. & SALESFORCE, CONSUMER EXPERIENCE IN THE RETAIL RENAISSANCE: HOW LEADING BRANDS BUILD A BEDROCK WITH DATA 11 (2018), <http://>

ing data with the express purpose of identifying customers' willingness to pay is an important indicator that personalized pricing is likely on the rise.<sup>45</sup>

Economic literature traditionally refers to the existence of three conditions for personalized pricing to take place: (i) the ability to assess consumers' individual willingness to pay; (ii) consumers' limited capability of performing arbitrage; and (iii) the presence of market power.<sup>46</sup> Added to these three preconditions is (iv) the ability to counter consumers' possible negative perception of personalized pricing by concealing this commercial practice. This part assesses briefly each of those preconditions and queries the extent to which those requirements may need to be revisited for current e-commerce practices, personal data, and algorithms.

A. *Ability to Assess Consumers' Individual Willingness to Pay*

For personalized pricing to yield positive results, suppliers need to have access to accurate data that allows them to predict within a reasonable range consumers' willingness to pay.<sup>47</sup> This criterion is often raised as an important barrier to personalized pricing effectively taking place. Access to a vast amount of personalized data does not guarantee the ability to determine with accuracy a consumer's reservation price. Many elements, including consumer preferences that may interfere

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/dmi-org.com/downloads/2018\_03\_consumer-experience-in-the-retail-renaissance.pdf.

45. Bar-Gill, *supra* note 4, at 218–19 (citing recent study findings that retailers and travel sites set prices that vary by hundreds of dollars between consumers; and referring to intermediaries gathering and selling information to retailers about consumers' willingness to pay, thus enabling personalized pricing); *id.* at 226–27 (referring to Optimal Decisions Group, which conducted research on consumers' willingness to pay and sold research and profit-maximizing pricing models to insurers; and to companies such as Freshplum and TellApart selling similar big data analytics business solutions).

46. OECD DIRECTORATE FOR FIN. & ENTER. AFF. COMPETITION COMM., PERSONALIZED PRICING IN THE DIGITAL ERA – NOTE BY THE EUROPEAN UNION 4–5 (2018), [https://one.oecd.org/document/DAF/COMP/WD\(2018\)128/en/pdf](https://one.oecd.org/document/DAF/COMP/WD(2018)128/en/pdf) [hereinafter OECD EU SUBMISSION].

47. OECD COMPETITION COMMITTEE, *supra* note 1, at 10–12 (enumerating and discussing the steps firms need to follow to implement personalized pricing).

with the decision to buy, are hard to measure and predict.<sup>48</sup> The ability to generate and apply accurate data has made commentators skeptical about “perfect, first-degree” algorithmic personalized pricing being possible in the near future.<sup>49</sup>

As we have seen earlier, the quality of predictive analytics tools is continually improving through machine learning and the volume of data collected and processed.<sup>50</sup> The end goal of the *behavioral futures market* products and economy is to remove uncertainty as much as possible in predicting human behavior.<sup>51</sup> While earlier skepticism about data prediction tool capabilities may have been legitimate, it seems less and less justified given the rapidly evolving and growing data extraction economy. A failure to acknowledge and closely monitor the effects of this change and the concerns they raise about the use of consumers’ personal data will be at the peril of regulators and enforcement bodies.

#### B. *The Absence of or Limited Arbitrage*

Another condition invariably invoked for personalized pricing to be attractive for suppliers is the limited ability of consumers to resell goods or services acquired from suppliers, which would create a market that competes with the suppliers’ market.<sup>52</sup> Arbitrage is typically not possible with respect to service contracts that are not transferrable, e.g., flight tickets, hotel accommodations, or online subscriptions to film or music.<sup>53</sup> It is more likely to take place with respect to durable goods and conversely less so with fungible goods.<sup>54</sup> This common assumption of limited arbitrage might need to be recon-

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48. EZRACHI & STUCKE, *supra* note 4, at 96–99 (pointing to a multiplicity of factors affecting price decisions in spite of the accuracy of the personalized data at hand, given a lack of predictability, (ir)rationality, insufficiency of sample size, and the fact that the algorithm may not have had enough trial and error opportunities available to accurately determine what variables were needed to calculate reservation prices); Bar-Gill, *supra* note 4, at 228–29.

49. EZRACHI & STUCKE, *supra* note 4, at 96–100.

50. *See supra* Part II.

51. ZUBOFF, *supra* note 26, at 19, 78.

52. EZRACHI & STUCKE, *supra* note 4, at 86–87; OECD COMPETITION COMMITTEE, *supra* note 1, at 13; Wagner & Eidenmüller, *supra* note 4, at 585–86; Bar-Gill, *supra* note 4, at 227.

53. OECD COMPETITION COMMITTEE, *supra* note 1, at 13.

54. *Id.*



sidered in the era of increasingly sophisticated algorithms that adjust price offerings. Personalized pricing can occur in subtle incremental or concealed ways that may not necessarily trigger the appetite for resale en bloc in a way that would compete with the suppliers' first sales. Also, the ability for buyers to determine alternate competitive prices may be diminished in the context of increasingly complex price offerings. This increased complexity to identify competing offerings may expand the absence of arbitrage beyond the traditional scenarios of non-transferable contracts and fungible goods. This in turn creates auspicious conditions for personalized pricing to occur with respect to a broader range of goods and services.

### C. Presence of Market Power

Conventional economics' wisdom requires the supplier to have some market power for personalized pricing to be a viable proposition.<sup>55</sup> As tempting as it may be to get as close as possible to a consumer's willingness to pay, suppliers do not want to lose sales by pricing their goods or services too high.

Traditional economic theory dictates that a competitive market will auto-regulate such practices.<sup>56</sup> In a perfectly competitive market, prices tend to go down to marginal cost for all consumers,<sup>57</sup> which in theory makes personalized pricing impossible.

Market power can be exercised through a variety of means including economies of scale and incentives to remain with one supplier that arise through fidelity programs as well as entry and switching costs.<sup>58</sup> Market power can also be exercised through network effects which include consumers becoming "captive" to a service or product or large scale social-

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55. Townley, Morrison & Yeung, *supra* note 4, at 691–92 (surveying economic literature on the likely presence and effects of personalized pricing in monopoly markets as opposed to competitive markets where personalized pricing is unlikely).

56. OECD COMPETITION COMMITTEE, *supra* note 1, at 11; *see also* OECD, DIRECTORATE FIN. & ENTER. AFF. COMPETITION COMM., PRICE DISCRIMINATION – BACKGROUND NOTE FROM THE SECRETARIAT 9, 32–33 (2016), [https://one.oecd.org/document/DAF/COMP\(2016\)15/en/pdf](https://one.oecd.org/document/DAF/COMP(2016)15/en/pdf) [hereinafter OECD COMPETITION COMMITTEE 2016]; Wagner & Eidenmüller, *supra* note 5, at 585–86.

57. OECD COMPETITION COMMITTEE, *supra* note 1, at 13.

58. *Id.* at 14.

media platform, for fear of losing the appeal of its wide users' network; the platform operator market power expanding thereby accordingly. Additionally, large retailer platforms also exhibit market power due to the promise of efficiency through reduced search costs, a developed relationship of trust between consumers and suppliers about competitive prices, and the comfort and convenience of an established account, which may take precedence over the vigilance required and expected of shoppers. Suppliers need not be in a position of monopoly per se and personalized pricing may occur in (imperfectly) competitive markets.<sup>59</sup>

#### D. *Concealed Personalized Pricing*

In addition to the above three frequently cited requirements, the ability to conceal the occurrence of personalized pricing is another precondition for suppliers to have recourse to this practice.<sup>60</sup> Consumers are generally averse to personalized pricing and view it as being unfair.<sup>61</sup> Suppliers have little interest in augmenting their profit base by nearing individual consumers' willingness to pay if it is at the risk of upsetting their whole consumer base.<sup>62</sup>

The detection of personalized pricing is complex, as data processing and algorithms become more sophisticated and powerful, allowing various permutations, intertwined with practices other than personalized pricing, such as dynamic pricing.<sup>63</sup> For instance, personalized pricing is much less dis-

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59. Miller, *supra* note 4, at 54, 57; Odlyzko, *supra* note 6, at 358 (on recognition in economic literature that price discrimination can arise in a competitive environment).

60. Bar-Gill, *supra* note 4, at 227–28 (arguing that personalized pricing may be more likely to occur where points of comparison between products are more difficult given variances or options between similar products or where it is more difficult to have access to what other consumers are paying for same product).

61. *See infra* Part IV.

62. *See, e.g.*, Andrew Odlyzko, *Network Neutrality, Search Neutrality, and the Never-Ending Conflict Between Efficiency and Fairness in Markets*, 8 REV. NETWORK ECON. 40, 49–50 (2009).

63. *See* Hannak et al., *supra* note 44. Refer to “Introduction” about the various obstacles, substantive and technical, to conducting a proper study to determine the existence of personalized pricing. *See also* Khan, *infra* note 90, at 763–64; OECD COMPETITION COMMITTEE, *supra* note 1, at 14; *see supra* Part I for further discussion on dynamic pricing.

cernible when it can be intertwined with dynamic pricing based on real time offers and demands, as is the case in the online airline ticket market, or the hotel industry.

Even for more overt instances of price discrimination—e.g., asking a different price for consumers who pay by cash or by credit card—suppliers will tend to frame their price offering in a positive way such as “discount if paying by cash,” as opposed to “higher price if paying by credit card.”<sup>64</sup> Other factors that may explain the relative opacity of personalized pricing are the sensitivity surrounding pricing structures generally—and more specifically to guard against claims of collusion with competitors.

As Frank Pasquale explains in *The Black Box Society*,<sup>65</sup> the lack of transparency regarding the handling of personal data has been a defining feature of e-commerce and the digital economy.<sup>66</sup> The likely inclination for suppliers to conceal the practice of personalized pricing has important ramifications on the proper path to regulating less detectable practices.<sup>67</sup>

In sum, the rapidly improving quality of behavioral predictive algorithmic tools, enabling more effective and targeted personalized pricing, the relative ease with which this commercial practice may be concealed, and the difficulty for consumers to discern competitive alternatives through pricing and advertising schemes bring new light to the traditional required factors for personalized pricing to take place, i.e. assessing the consumer’s willingness to pay, limited arbitrage, and the presence of market power.

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64. EZRACHI & STUCKE, *supra* note 4, at 111 (referring to this practice as the “framing effect” to attenuate any negative perception of unfairness).

65. PASQUALE, *supra* note 32.

66. *Id.* at 3 (“The law, so aggressively protective of secrecy in the world of commerce, is increasingly silent when it comes to the privacy of persons”); ZUBOFF, *supra* note 26, at 338–45 (listing several factors explaining how “surveillance capitalists” have been able to get away for so long with concealing personal data handling practices from their consumers and the public; among them, consumers’ self-interest, social persuasion, inevitabilism, ignorance, and unprecedented, i.e. *sui generis* environment, logic and methods that were initially impossible to comprehend).

67. *See infra* Part VI.

## IV.

## CONSUMERS' LEVEL OF ACCEPTANCE OF PERSONALIZED PRICING

Available consumer surveys indicate a strong consumer dislike of discriminatory pricing. In one survey of 1500 American households published in 2005, 91% of respondents were strongly against retailers charging different prices for the same product based on the collection of personal information.<sup>68</sup> In another survey conducted by the EU Commission in 2018 with more than 20,000 consumers, only around 8% of consumers viewed such practices as beneficial and the percentage of consumers who were strongly opposed (around 33%) was lower than in the American study, with a large percentage being neutral or not knowing the answer.<sup>69</sup> When specific suppliers' personalized pricing practices are brought to light, suppliers are usually swift to claim system mistakes or a mere trial period and declare an end to the practice altogether.<sup>70</sup> As a result of consumers' general disapproval of discriminatory pricing due to their perception of it being unfair,<sup>71</sup> retailers will either refrain from the practice or do it secretly.<sup>72</sup>

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68. See Joseph Turrow et al., *Open to Exploration: America's Shoppers Online and Offline*, Penn Libraries 35 (June 1, 2005) [https://repository.upenn.edu/asc\\_papers/35](https://repository.upenn.edu/asc_papers/35); OECD COMPETITION COMMITTEE, *supra* note 1, at 24.

69. EUR. COMM., CONSUMER MARKET STUDY ON ONLINE MARKET SEGMENTATION THROUGH PERSONALIZED PRICING/OFFERS IN THE EUROPEAN UNION (2018), [https://ec.europa.eu/info/sites/info/files/aid\\_development\\_cooperation\\_fundamental\\_rights/aid\\_and\\_development\\_by\\_topic/documents/synthesis\\_report\\_online\\_personalisation\\_study\\_final\\_0.pdf](https://ec.europa.eu/info/sites/info/files/aid_development_cooperation_fundamental_rights/aid_and_development_by_topic/documents/synthesis_report_online_personalisation_study_final_0.pdf); OECD COMPETITION COMMITTEE, *supra* note 1, at 24–25.

70. Kate Abnett, *Will Personalized Pricing Take E-Commerce Back to the Bazaar?*, BUS. OF FASHION (Mar. 20, 2015), <https://www.businessoffashion.com/articles/fashion-tech/personalised-pricing-turns-e-commerce-online-bazaar> (“Amazon was found to be charging its regular consumers higher prices for some products, after one shopper deleted the cookies on his computer that identified him as a regular Amazon customer and saw the price of a DVD drop.”).

71. UK OFF. OF FAIR TRADING, ONLINE TARGETING OF ADVERTISING AND PRICES: A MARKET STUDY 48 (2010); US PRESIDENT EXECUTIVE OFFICE, *supra* note 33, at 13; OECD COMPETITION COMMITTEE, *supra* note 1, at 14; Joost Poort & Frederik J. Zuiderveen Borgesius, *Does everyone have a price? Understanding people's attitude towards online and offline price discrimination*, 8 INTERNET POL'Y REV., 1 (2019) <http://dx.doi.org/10.14763/2019.1.1383> (analysis of two surveys conducted in the Netherlands, whereby vast majority of consumers viewed practice of online price discrimination unfair).

72. See *supra* Part III (the ability to conceal the practice of algorithmic personalized pricing is one pre-condition for its occurrence).

To what extent should consumer surveys inform law and policy? As informative and reliable as surveys may be, they should not detract from a principled approach, by law and policy makers, to the challenges posed by the exponential proliferation of use of personal data in e-commerce, or any other field for that matter. For instance, consumers' embrace of the convenience of apps using vast amounts of personal data should not justify law and policy actors' inaction if there are valid concerns to intervene, e.g. exploitation. At the same time, consumers' dislike of a commercial practice such as personalized pricing, merits further investigation. What lies beneath the marked dislike in discriminatory pricing, particularly when resorting to personal information, is what should be explored further in identifying potential concerns with this commercial practice and better articulating the reasons behind such discomfort.

## V.

### NORMATIVE CONSIDERATIONS AROUND ALGORITHMIC PERSONALIZED PRICING

What are the reasons behind an innate aversion to algorithmic personalized pricing? After all, various forms of discriminatory pricing have been around for some time and are commonplace. The common assumption is that save for predatory pricing and other anti-competitive, deceptive, or anti-discrimination law practices, suppliers should be free to sell products at whatever price they decide, so long as the price is disclosed unequivocally to consumers. Consumers will do their research about comparable products and can choose to walk away from the transaction if the price is above their willingness to pay. Suppliers' primary incentive is to make sales; market forces will keep them in line by ensuring that prices remain competitive, as the conventional narrative goes.<sup>73</sup> The above assumptions are increasingly under attack and scrutinized in ways that are particularly relevant to our discussion on the acceptability of personalized pricing. The increased concentra-

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73. See, e.g., COMPETITION BUREAU CAN., *BIG DATA AND INNOVATION: KEY THEMES FOR COMPETITION POLICY IN CANADA* 5 (2018), <https://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/04342.html> ("Competition law and policy should continue to rely on market forces to lead to beneficial outcomes, not regulate prices or other outcomes.").

tion of market power with products delivered through large internet platforms makes “first degree or perfect price discrimination” more likely.<sup>74</sup> As discussed earlier, the prevalent online practice of “versioning” makes it harder and more labor intensive for consumers to ascertain competitive prices for comparable products.<sup>75</sup> Documented misleading commercial practices of “dark patterns” create confusion and incite hastiness in purchasing decisions that should be taken into account in our discussion on the acceptability of personalized pricing.<sup>76</sup> Last but not least and central to the present discussion, the power to significantly influence consumers’ decisions through the use of their personal data skews asymmetries between buyer and seller in favor of the latter even more than has ever been the case. In the context of personalized pricing, this may involve third degree forms of “behavioral discrimination”<sup>77</sup> to first degree starker individualized forms of price discrimination. It is in the context of the power beneath massive use of personal data and shifting assumptions around market forces that the acceptability of algorithmic personalized pricing needs to be reconsidered.

#### A. *Discursive Prevailing Norms*

Questions about the adequacy of algorithmic personalized pricing tend to be addressed predominantly on the basis of economic considerations and the effects algorithmic personalized pricing may have on competition and market efficiency. Other considerations revolve around values of equality, fairness, trust, privacy, autonomy, and transparency. While these different sets of considerations (i.e. economic-based and value-based) are not completely distinct from each other (e.g., maintaining trust in the marketplace is also an underlying value of competition law and policy), in some important ways

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74. *See supra* Part I.

75. *See id.*

76. *See generally* Jamie Luguri & Lio Strahilevitz, *Shining a Light on Dark Patterns* (Univ. of Chi. Pub. Law., Working Paper No. 719, 2019) (describing deceptive online practices, e.g., inciting consumers to provide personal information they would otherwise not agree to supply, and conducting empirical research on the possible effectiveness of such tactics); Deceptive Experiences to Online Users Reduction (DETOUR) Act, § 1084 116th Cong. (2019) (introduced to deal with phenomenon of “dark patterns”).

77. EZRACHI & STUCKE, *supra* note 4, at 110–11. *See supra* Part I.

they are different. While evaluating the competitive effects of a commercial practice tends to focus on the economic efficiency of free and open markets as an underlying objective or core premise, values of equality and fairness tend to focus on questions of discrimination, social justice, consumer perceptions and protection,<sup>78</sup> and on issues where the harm may be more diffuse, through potential collective and longer-term harm, such as progressive normative degradation that may be occasioned by important shifts in commercial practices. This part will provide an overview of normative considerations guided by economic, antitrust, and competition perspectives, followed by considerations that revolve around the core values of equality, fairness, privacy, transparency, and autonomy.

B. *Freedom, Market Efficiency, Competition, and Innovation*

In liberal free-market democracies, there is an underlying assumption that suppliers are free to set prices as they see fit for the products they sell. Supplier freedom in pricing practices expresses “the belief that the value of goods is determined solely by the transacting parties’ subjective judgment of the utility of the goods to them.”<sup>79</sup> The golden rule of fair market value leaves it to what the buyer agrees to pay and the supplier agrees to sell for as the benchmark. The notion of pricing freedom relies heavily on contracting parties’ autonomy and, in mass market transactions, on competitive markets as the gatekeepers that steer prices toward the lower end.

Pricing freedom explicitly rejects “‘just price’ theories,” which Miller traces back as far as Roman and medieval law, under which “goods have an independent and objective fair price.”<sup>80</sup> Some concept of a “just price” subsists in some instances, as we are reminded amid the COVID-19 pandemic or

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78. See Townley, Morrison & Yeung, *supra* note 4, at 744–48 (drawing conclusions on effects of algorithmic consumer price discrimination after having conducted an extensive analysis on the legal issues surrounding personalized pricing through the lens of two distinct norms: economic efficiency and fairness or justice, which the authors describe as encompassing consumers’ subjective perceptions, and regarding unfairness to social groups).

79. Miller, *supra* note 4, at 68.

80. *Id.* at 68, 75–76.

natural disasters, by the existing social norms and laws that ban price gouging and other exorbitant pricing tactics.<sup>81</sup>

Supplier freedom is a default rule and core value that underpins the regulation of pricing practices.<sup>82</sup> A priori, the supplier freedom assumption entails the ability to practice price discrimination if firms so decide, subject to such practices violating antidiscrimination, human rights, and antitrust laws.<sup>83</sup> Unrestrained pricing freedom and its heavy reliance on autonomy and market efficiency is more justified with respect to negotiated transactions and particularly with respect to sales of unique objects or property. Unrestricted supplier freedom as the base norm is less justified in online mass market consumer transactions where both consumer autonomy and market efficiency are compromised. Suppliers' increasingly powerful tools and use of personal data influence online consumer purchasing decisions. This is especially true in "micro-marketplace chambers," where consumers' judgement of competitive alternatives in the marketplace are blurred.<sup>84</sup> In that context, there may be merit in reconsidering some boundaries to a "just price" as gravitation points and counterweights to increasing asymmetry of information and power between suppliers and consumers.

Most commentators on personalized pricing are guarded about its possible positive or negative effects on competition.<sup>85</sup>

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81. Jack Nicas, *He Has 17,000 Bottles of Hand Sanitizer and Nowhere to Sell Them*, N.Y. TIMES (Mar. 14, 2020), <https://www.nytimes.com/2020/03/14/technology/coronavirus-purell-wipes-amazon-sellers.html?auth=login-facebook> (discussing Amazon cracking down on price gouging).

82. See Miller, *supra* note 4, at 68 ("[T]he liberal tradition . . . places a greater burden of persuasion on the shoulders of those who would advocate rules to regulate free markets.").

83. For example, if price discrimination amounts to abuse of market power (also referred to as abuse of a dominant position), it is related to predatory pricing, or price fixing practices.

84. The author refers to "micro-marketplace chambers" by analogy to the phenomenon of "echo chambers," whereby tailored online business practices may create or reinforce false perceptions by consumers about relevant markets. See also EZRACHI & STUCKE, *supra* note 4, at 108–09 (on how firms intentionally make price and other offerings more complex, increasing search and switching costs, and lowering effective competition).

85. See, e.g., Zuiderveen Borgesius & Poort, *supra* note 4, at 353–54 (calculating overall economic welfare by adding consumer surplus to supplier profits and by comparing its value under various scenarios with or without price discrimination in a monopolist market); Wagner & Eidenmüller, *supra*



Aside from cases where the practice would amount to abuse of a dominant position or be connected to price collusion or cartels, there is no consensus about whether personalized pricing has positive effects on competition.<sup>86</sup> What adds an additional layer of complexity to that assessment, and often fails to be acknowledged in the economic and legal literature on personalized pricing, is that views diverge on the end goals of competition law and policy. The determination of the (anti)competitive effects of a commercial practice, including algorithmic personalized pricing, depends in great part on the standards applied to determine an increase or decrease in competition. Are the (anti)competitive effects of a commercial practice determined by the effect of the practice on consumer welfare, the prevailing standard in the United States?<sup>87</sup> If so,

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note 4, at 587–88; OECD COMPETITION COMMITTEE, *supra* note 1, at 20 (noting that personalized pricing is likely to be more harmful to consumers in noncompetitive markets and could increase competition in competitive markets); DIRECTORATE FOR FIN. & ENTER. AFFS. COMPETITION COMM., OECD, PERSONALISED PRICING IN THE DIGITAL ERA – NOTE BY THE UNITED STATES 4 (Nov. 28, 2018), [https://www.ftc.gov/system/files/attachments/us-submissions-oecd-2010-present-other-international-competition-fora/personalized\\_pricing\\_note\\_by\\_the\\_united\\_states.pdf](https://www.ftc.gov/system/files/attachments/us-submissions-oecd-2010-present-other-international-competition-fora/personalized_pricing_note_by_the_united_states.pdf) [hereinafter OECD U.S. SUBMISSION] (positing that the overall welfare effects of second- and third-degree price discrimination are unclear, and that perfect first-degree price discrimination would unambiguously increase total welfare; however, in monopolies, first-degree price discrimination would extract all consumer surplus, leaving some consumers worse off than under uniform pricing); DIRECTORATE FOR FIN. & ENTER. AFFS. COMPETITION COMM., OECD, PERSONALIZED PRICING IN THE DIGITAL ERA – NOTE BY BEUC, 2 (Nov. 28, 2018), [https://one.oecd.org/document/DAF/COMP/WD\(2018\)129/en/pdf](https://one.oecd.org/document/DAF/COMP/WD(2018)129/en/pdf) [hereinafter OECD BEUC SUBMISSION] (alleging that increased market efficiency through discriminatory pricing ignores that consumers' willingness to pay can be manipulated through use of deceptive practices, reducing consumer surplus significantly).

86. See *infra* notes 94–107.

87. See generally Herbert Hovenkamp, *Antitrust in 2018: The Meaning of Consumer Welfare Now*, 6 PENN WHARTON PUB. POL'Y INITIATIVE, Issue Brief 8 (2018) (positing that in light of recent debate in U.S. antitrust policy on its core objectives, the consumer welfare principle has been and should remain the cardinal rule of antitrust policy, with some minor updates proposed by the author); Steven C. Salop, *Question: What Is the Real and Proper Antitrust Welfare Standard? Answer: The True Consumer Welfare Standard*, 22 LOY. CONSUMER L. REV. 336 (2010); Russell Pittman, *Consumer Surplus as the Appropriate Standard for Antitrust Enforcement*, 3 COMPETITION POL'Y INT'L 205 (2007); Miller, *supra* note 4, at 70–71.

how do we define consumer welfare?<sup>88</sup> Or should the proper standard be the effect of a practice on overall economic or social welfare?<sup>89</sup> And if so, how do we define and assess increased social welfare?<sup>90</sup> Alternatively, should we leave behind the concept of increased welfare as a standard due to its vagueness and difficulty of measurement, and focus on the process of ensuring competitive markets<sup>91</sup>—with the hope that anticompetitive practices may be addressed sooner and more effectively?<sup>92</sup>

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88. See Hovenkamp, *supra* note 87, at 1 (defining consumer welfare principle as “the proposition that anti-trust policy should encourage markets to produce two things for the benefit of consumers: (1) output that is as high as is consistent with sustainable competition, and (2) prices that are accordingly as low”).

89. See Joseph F. Brodley, *The Economic Goals of Antitrust: Efficiency, Consumer Welfare, and Technological Progress*, 62 N.Y.U. L. REV. 1020 (1987); EZRACHI & STUCKE, *supra* note 4, at 203 (on the ultimate end goals of antitrust and competition law enforcement being about the promotion of flourishing innovation and investment while minimizing harms); Hovenkamp, *supra* note 87, at 3 (pointing out that a general welfare test balances consumer harm against producer benefits and that its application can lead to accepting a significant amount of market power as not being anticompetitive).

90. See Lina Khan, *Amazon Antitrust Paradox*, 126 YALE L.J. 710, 743 (2017) (arguing against consumer welfare as the standard for evaluating procompetitive effects, looking at U.S. Congress’s legislative intent having been historically against extreme concentrations of market power and as having a variety of aims “including: the preservation of open markets, the protection of producers and consumers from monopoly abuse, and the dispersion of political and economic control”).

91. See *id.* at 737–38, 744 (positing that competition law and policy should promote competitive markets, not welfare, and that focusing attention on process and structure would be more aligned with the legislative history of the main U.S. antitrust laws and allow regulators to intervene sooner than when focusing on high prices and low outputs as indicators of anticompetitive effects); Tim Wu, *After Consumer Welfare, Now What? The Protection of Competition’ Standard in Practice* 9 (Competition Policy Int’l, Columbia Pub. Law Research Paper No. 14-608, 2018), [https://scholarship.law.columbia.edu/faculty\\_scholarship/2291](https://scholarship.law.columbia.edu/faculty_scholarship/2291) (positing that law enforcers should ask, “is the complained-of conduct (or merger) merely part of the competitive process, or is it meant to ‘suppress or even destroy competition?’” rather than rely on more abstract concepts of increasing wealth or welfare).

92. See Khan, *supra* note 90, at 739 (noting that, even by applying the standard of increased consumer welfare, U.S. antitrust law has failed to maintain low prices for consumers).

Diverging views about the desired outcomes that competition law and policy should aim for are indicative of the perceived inadequacy of competition and antitrust laws to properly address increased and sustained market dominance of giant web platforms and search engines. This malaise goes way beyond the confines of competition law and policy (e.g., tax law, regulation of damaging content including fake news, copyright infringement, and freedom of expression).

Whatever standard(s) or process(es) may be better suited to identify and address anticompetitive practices, they will fail to adequately evaluate the (anti) competitive effects of algorithmic personalized pricing if such standards do not factor in the use and control of data, and how such data use and control affect bargaining power in consumer transactions and between firms.<sup>93</sup>

With this important caveat in mind about diverging views on the end goal of competition law and policy, below are some of the effects that personalized pricing may have on competition. In perfect monopoly markets, discriminatory pricing will be detrimental to consumers by lowering consumer surplus, but the effects are less clear in imperfect competitive markets.<sup>94</sup> Policy reports generally favorable to the competitive effects of personalized pricing will also point to potential detrimental effects and invite competition agencies to vigilance.<sup>95</sup> In the instances where personalized pricing might increase economic welfare by reaching out to more consumers that would otherwise not pay for a good or service at a uniform price that

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93. *See id.* at 745–46 (providing factors to consider if we focus on the competitive process and openness of the market rather than on consumer welfare: “(1) entry barriers, (2) conflicts of interest, (3) the emergence of gatekeepers or bottlenecks, (4) the use of and control over data, and (5) the dynamics of bargaining power”).

94. *See* Townley, Morrison & Yeung, *supra* note 4, at 702. *But see* OECD U.S. SUBMISSION, *supra* note 85.

95. *See* OECD COMPETITION COMMITTEE 2016, *supra* note 56, at 36–37 (noting that price discrimination is generally positive for the economy and pointing out that it will often benefit consumers through an increase in trade and by pressing firms to compete, and that this should be the baseline of policymakers’ approach to discriminatory pricing. The report also points to possible pitfalls of increasing (or abusing) dominance in the marketplace that policy agencies should be wary of—e.g., partitioning strategies, price discrimination between intermediate purchases, and exclusionary price discrimination to exclude rivals).

is too high, and increase suppliers' profits, it could also lead to an increase in market power, making entry for new competitors more difficult.<sup>96</sup> Even when personalized pricing does not lead to increased market power through suppliers' greater market reach, it would nevertheless tend to reduce consumer surplus while increasing producer surplus.<sup>97</sup> Assertions of overall increased economic welfare require scrutiny: should that include scenarios of increased business welfare at the expense of the resulting decreased consumer welfare?<sup>98</sup>

The case remains to be made that price discrimination has positive distributive effects among lower and higher buyers' purchasing power, allowing the former greater access by paying less through the latter paying more.<sup>99</sup> From the standpoint that suppliers aim for greater proximity to consumers'

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96. See Zuiderveen Borgesius & Poort, *supra* note 4, at 354 (noting that price discrimination is advantageous for suppliers in markets with high fixed costs and low marginal costs, allowing suppliers to recoup their fixed costs without incurring important dead-weight-losses). On possible benefits and negative effects of personalized pricing, see EZRACHI & STUCKE, *supra* note 4, at 118–19; see also Rosa-Branca Esteves & Joana Resende, *Personalized Pricing and Advertising: Who Are the Winners?*, 63 INT'L J. INDUS. ORG. 239, 243 (2019) (observing that, while it is hard to predict welfare effects of the combined practices of targeted personalized advertising and personalized pricing, if welfare goes up, it would generally be to the benefit of suppliers and the detriment of consumers compared to mass advertising and mass pricing).

97. See Zuiderveen Borgesius & Poort, *supra* note 4, at 355 (noting that this trend could even increase with more sophisticated personalized pricing practices getting closer to first-degree discriminatory pricing); OECD EU SUBMISSION, *supra* note 46, at 5 (observing that personalized pricing is likely to be more negative to consumers overall and especially with respect to first-degree price discrimination, on the basis of an output-expansion effect (procompetitive effect) combined with a wealth-transfer effect (anticompetitive effect), the latter being likely to be more pronounced).

98. See Miller, *supra* note 4, at 69 (“Practices that increase overall social welfare but harm most consumers raise serious ethical concerns. Accepting the contrary would mean preferring the welfare of business enterprises to the welfare of the consumer masses, a position that is hard to defend”).

99. See OECD COMPETITION COMMITTEE, *supra* note 1, at 20 (UK submission pointing to mixed empirical evidence about the impact of traditional price discrimination on surplus distribution among consumers and producers, and citing various studies to that effect); OECD EU SUBMISSION, *supra* note 46, at 5–6; DIRECTORATE FOR FIN. & ENTER. AFFAIRS COMPETITION COMM., OECD, PERSONALISED PRICING IN THE DIGITAL ERA - SUMMARIES OF CONTRIBUTIONS 4 (Nov. 27, 2018) [https://one.oecd.org/document/DAF/COMP/WD\(2018\)146/en/pdf](https://one.oecd.org/document/DAF/COMP/WD(2018)146/en/pdf) [hereinafter OECD SUMMARIES OF CONTRIBUTIONS] (BEUC submission).

reservation price through personalized pricing, the more likely scenario is that all consumers will pay more, with no positive distributive considerations or effects between the more and less affluent in mind.

Some argue that personalized pricing practices may have a positive effect on competition by making price fixing or collusion more difficult among suppliers, especially when such practices are not easily detectable by competitors (such as secret discounts).<sup>100</sup> However, this argument can be tempered with the caveat that competing firms using similar personalized pricing algorithms could still give rise to pricing trends with similar types of variation ranges in the marketplace. This phenomenon, referred to as “conscious parallelism,” may negatively impact competition, however, and, depending on the jurisdiction, may fall short of amounting to prohibited collusion practices.<sup>101</sup>

Commentators also raise increased supplier innovation as one possible positive effect of personalized pricing— by potentially increasing supplier surplus, personalized pricing may lead toward increased supplier innovation in their products that will in turn benefit consumers.<sup>102</sup> The possible correlation between personalized pricing and increased innovation seems somewhat hypothetical and at the mercy of suppliers’ choice and discretion in how they would use their increased surplus. In fact, the contrary argument may be made: putting in place personalized pricing schemes can be costly to suppliers and can take away precious funds from investment in product innovation.<sup>103</sup> Moreover, the cost of implementing complex marketing practices may end up being borne by consumers, leaving them with no additional benefits and creating a loss by progressively eating away at consumer surplus.<sup>104</sup> To the extent that suppliers resort to behavioral discrimination practices, the loss to consumers may be even greater—for example,

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100. See OECD COMPETITION COMMITTEE, *supra* note 1, at 21.

101. See COMPETITION BUREAU CAN., *supra* note 73, at 10.

102. See OECD COMPETITION COMMITTEE, *supra* note 1, at 21; EZRACHI & STUCKE, *supra* note 4, at 118.

103. See Miller, *supra* note 4, at 66 (“Instead of competing over better quality, more variety, or cost reduction, firms compete over adoption of marketing tools that do not enhance consumer welfare in any meaningful way, and may even be socially detrimental.”).

104. See *id.*; EZRACHI & STUCKE, *supra* note 4, at 121.

by insidiously incenting consumers to purchase more products they do not need through the creation of false need perceptions that further decrease consumer surplus.<sup>105</sup>

Consumers' response to this new supplier "innovation" in the form of a personalized pricing marketing scheme may lead them to fight back with innovations to protect their anonymity (or any relevant data to assess their purchasing power), leading to an "arms race" from which no net gains will result. This would create more negative externalities in the sense that it would lead to investing in "non-welfare-enhancing competitive technologies."<sup>106</sup> From that standpoint, the technologically savvy and educated consumers would be less likely to be harmed by algorithmic personalized pricing by "beating suppliers at their own game." Are these the consumers we should reward? At what cost for them? How counterproductive would it be to the overall expectation of increased efficiency in the online marketplace?

In sum, a review of recent economic and legal literature suggests that, at best, algorithmic personalized pricing has neutral competitive effects with a likelihood of decrease in consumer welfare. If consumer welfare is determined primarily from the standpoint of ensuring the lowest possible price to consumers, the practice of personalized pricing, which seeks to get as close as possible to consumers' reservation price, would decrease consumer welfare, unless it can be demonstrated that the price increase is counterweighted by greater output. To the extent that consumer welfare is the standard by which the (anti) competitive effects of a practice are measured, then personalized pricing would have anticompetitive effects.<sup>107</sup>

Even if a cogent argument could be made that personalized pricing increases competition by other measures, such as overall increase of social or economic welfare, personalized pricing still needs to be assessed from a fair commercial practice standpoint, unless one is willing to accept that increased social or economic welfare should be encouraged even when

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105. EZRACHI & STUCKE, *supra* note 4, at 119–21. See generally Bar-Gill, *supra* note 4.

106. Miller, *supra* note 4, at 67; Wagner & Eidenmüller, *supra* note 4, at 587.

107. See Miller, *supra* note 4, at 70–71.

achieved on the back of unfair transactions for consumers. The norms and values that underpin and help assess the fairness of transaction prices will be explored next.

C. *Equality, Fairness, Privacy, Transparency, and Autonomy*

1. *Equality*

By its essence, the practice of algorithmic personalized pricing discriminates between different consumers, based on various characteristics that relate to them (e.g., area code, street address, type of device used to make purchase, purchase history, gender, and age). Not surprisingly, the moral value of equality—that, a priori, we should all be treated the same—comes to mind when assessing the acceptability of personalized pricing.

In a brick-and-mortar world, we are accustomed to uniform pricing—the same price tag applies to all, unless the customer uses coupons or rewards points to receive a discount.<sup>108</sup> Introduced with the advent of large department stores in the late nineteenth century, uniform pricing changed the way consumers purchased goods and services.<sup>109</sup> Prior to that, purchasing goods and services involved bargaining, where the supplier could apply their personal knowledge of a customer in how they set their price, commonly occurring in bazaars and small-town general stores.<sup>110</sup> Efficiency was likely an important driver behind suppliers' introduction of uniform pricing.<sup>111</sup> Incidentally, uniform pricing also embeds the value of treating customers equally, and we have grown accustomed to

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108. See Townley, Morrison & Yeung, *supra* note 4, at 712 (on how customers have become accustomed to uniform pricing as a social convention and on the contrast between the physical store environment and online e-commerce).

109. See Brian Wallheimer, *Are You Ready for Personalized Pricing? Companies Are Figuring Out What Individual Customers Will Pay—and Charging Accordingly*, CHI. BOOTH REV. (Feb. 26, 2018), <http://review.chicagobooth.edu/marketing/2018/article/are-you-ready-personalized-pricing> (attributing the introduction of price tags in retail stores in the United States, in the 1870s, to John Wanamaker, with the advent of large department stores).

110. See Abnett, *supra* note 70.

111. This statement is made on the premise that one-on-one bargaining may have worked in small-town general stores but was no longer tenable in large department stores with increased volumes of merchandise and customers, it being too time-consuming and as sales clerks would be more detached from the product than was the owner of the traditional store.

this commercial practice, with the occasional exception of farmers' markets and bazaars where traditional practices co-exist with more modern ones. Over time, price labeling laws have reinforced the practice of uniform pricing imposing certain legal requirements.<sup>112</sup> Such practice is transparent to consumers, a value discussed further below in this part, and in addition generally treats customers in the same location equally.

Liberal free-market democratic ideals give leeway on the value at which suppliers price goods or services.<sup>113</sup> The bias has traditionally been against regulation interfering with the market.<sup>114</sup> Viewed as coercive, legal intervention on how suppliers price their goods is justified in limited cases, such as to prevent harm to consumers,<sup>115</sup> including human-right types of discrimination (e.g., on the basis of race, ethnicity, gender, and sexual orientation).<sup>116</sup> Even if uniform pricing would guarantee the same price for similar goods, nothing precludes suppliers from charging a different price at a different location. Thus, while brick-and-mortar uniform pricing practices as reinforced by price label regulation embed equal treatment of customers, the uniformity of pricing practices and equality of treatment in that regard have never been absolute.<sup>117</sup> The widespread commercial practice of coupons and fidelity discounts comes to mind. Uniform pricing label laws may have more to do with a requirement of disclosure and transparency in the relationship between seller and buyer than with a requirement of equality between buyers.

While law and common practice allow a great amount of flexibility in how suppliers set their prices, it seems difficult to

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112. See, e.g., N.Y. AGRIC. & MKTS. LAW § 197-b (McKinney 2006); N.Y. AGRIC. & MKTS. LAW § 214-h (McKinney 2013); Consumer Protection Act, C.Q.L.R., c. P-40.1, § 223 (Can.).

113. See Miller, *supra* note 4, at 68 (citing generally FRIEDRICH A. HAYEK, *THE ROAD TO SERFDOM* (1944) and MILTON FRIEDMAN WITH ROSE D. FRIEDMAN, *CAPITALISM AND FREEDOM* (1962)).

114. See *id.*; see also PAOLO SICILIANI, CHRISTINE RIEFA & HARRIET GAMPER, *CONSUMER THEORIES OF HARM: AN ECONOMIC APPROACH TO CONSUMER LAW ENFORCEMENT AND POLICY MAKING* 92 (2019) (“[R]eceived wisdom is that public intervention is less effective at eradicating consumer detriment than relying on the natural tendency of markets to self-correct.”).

115. See Townley, Morrison & Yeung, *supra* note 4, at 710, 721.

116. See, e.g., Human Rights Code, R.S.O. 1990, c. H.19, § 3 (Can.).

117. See Townley, Morrison & Yeung, *supra* note 4, at 711.



dismiss the value of equal treatment of consumers altogether. How can we explain the strong distaste for personalized pricing other than by the perceived injustice and expectation of being treated a priori equally to another purchaser for the same good purchased around the same time and place? Valuing equality may also explain when discriminatory pricing becomes justified—i.e., when it increases social equality, such as post-secondary education tuition fee rebates, for students who could otherwise not afford it.<sup>118</sup> Equality as an ideal may also explain why group price discrimination (e.g., student or senior rebates) is under increasing scrutiny from the standpoint that the financial disparity between those groups and the rest of the population—which was the traditional rationale for the price discrimination—may no longer be justified.<sup>119</sup>

On the terrain of equality of treatment between individuals in pricing practices, is there not an important distinction between differential treatment dictated by supplier constraints (supply and demand, production costs, time of sale of perishable goods, etc.) and differential treatment based predominantly on consumer personal characteristics for the main (if not sole) purpose of getting to their reservation price? Arguably, it is when discrimination is based predominantly on consumer personal characteristics, rather than on supplier legitimate exigencies, that equality becomes a pertinent anchoring value that merits closer attention on the basis that such price differentiations are arbitrary when not founded on objective supplier criteria, such as costs of production and delivery or demonstrated increased value (e.g., added features to product) offered to the consumer. While some price differentiation is justified, human rights prohibitions against specific categories of discrimination (e.g., gender, race, sexual orientation) are precisely there to eliminate unequal treatment on arbitrary bases.

## 2. *Fairness and Privacy*

In addition to issues of equality, questions of fairness regarding personalized pricing may arise. These questions con-

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118. See EZRACHI & STUCKE, *supra* note 4, at 118, 122.

119. *But see* Human Rights Code, R.S.O. 1990, c H-19 § 15 (Can.) (expressly allowing preferential treatment for people aged sixty-five years and over).

cern supplier-consumer relations rather than the relationship between consumers offered the same product. Although courts will generally not review the fairness of a contract on the basis of freedom of contract, the requirement of fairness is present in contract law doctrines protecting weaker parties (e.g., duress, undue influence, and unconscionability) in the doctrine of good faith, and in consumer contracts (e.g., statutory “black lists” of commercial practices that are deemed unfair).<sup>120</sup> The requirement of fairness in commercial transactions intervenes mainly between the supplier and the consumer (e.g., on the types of representations made and the effects of inequality of bargaining power).<sup>121</sup>

In the context of algorithmic personalized pricing, fairness issues may arise with respect to the magnitude and level of consumer personal information collected, and how this may constitute an abuse of the asymmetry of bargaining power and information between supplier and consumer. Although an argument may also be made that the pricing process leading to treating one consumer arbitrarily unequally vis-à-vis others is unfair, fairness issues may also arise between consumers and suppliers irrespective of the treatment of other consumers.

The unfairness related to the potential abuse in the collection of personal data contemplated here refers not only to the amount of personal data collected but also to the personal purchasing power profile that is created about each consumer through powerful algorithms. Whether the personal information is to some extent publicly available is beside the point; it is the level of intrusion into each of the consumers’ personal integrity and intimacy that is problematic as it touches upon consumers’ expectations of privacy.

Referring to the work of Helen Nissenbaum on privacy and the concept of “contextual integrity,” Townley, Morrison & Yeung explain how perceptions of fairness of price discrimi-

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120. *See, e.g.*, Consumer Protection Act, S.O. 2002, c 30, Sched. A §§ 15–19 (Can.) (listing various false, misleading, deceptive, and unconscionable representations as unfair practices allowing the consumer to rescind the contract and to seek other remedies).

121. Through the application of the common-law doctrines of misrepresentation and doctrines seeking to protect weaker parties—in particular, unconscionability. *See, e.g.*, *Bhasin v. Hrynew*, [2014] 3 S.C.R. 494, paras. 42–43 (Can.); *Douez v. Facebook, Inc.*, [2017] 1 S.C.R. 751, paras. 129, 131–34 (Can.); *Uber Tech. Inc. v. Heller*, 2020 SCC 16 paras. 54–91 (Can.).

nation are highly incumbent on social norms, customs, and trade practices.<sup>122</sup> Consumers have substantive expectations about proper and improper uses of their personal information that are molded by social norms or “standards of good behavior” within a particular context.<sup>123</sup> From that, Townley, Morrison & Yeung argue that personalized pricing could be unfair dealing to the extent that it is a violation of consumers’ substantive expectation of privacy or “contextual integrity.”<sup>124</sup> The “contextual integrity” of privacy relates to the requirement of proportionality found in privacy regulation, under which businesses are bound to process only such personal information that is reasonably justified relative to its intended declared purpose, regardless of whether the consumer has consented to the collection of such personal information or not.<sup>125</sup>

In contrast with a brick-and-mortar store, online prices are not uniform or transparent.<sup>126</sup> Over time, one could argue that consumers’ expectation of use of their personal data in e-commerce may change and a practice deemed unfair now may no longer be so then.<sup>127</sup> There are several difficulties with the argument that the processing of personal data leading to personalized pricing may become acceptable and fair as consumers will become increasingly aware of such practices over time. This argument of consumer awareness ties the fairness of a practice too heavily with whether it has been disclosed to the consumer or their general awareness of it. Disclosing the use of personal information and the practice of personalized pricing

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122. Townley, Morrison & Yeung, *supra* note 4, at 710–12 (citing Helen Nissenbaum, *A Contextual Approach to Privacy Online*, 140 DAEDALUS 32 (2011)).

123. *Id.* at 711–12.

124. *Id.* at 710–11.

125. See Personal Information Protection and Electronic Documents Act, S.C. 2000, c 5, Sched. 1, §§ 4.5, 6.1 (Can.) [hereinafter PIPEDA]; see also CCPA, *supra* note 39, § 1798.140(d) (distinguishing personal information collected for a “business purpose” that relates to information reasonably necessary for a business’s operational purposes from other purposes); *id.* at § 1798.100(b) (noting, however, that CCPA § 1798.140(d) does not prohibit use of personal information for other, nonbusiness purposes, but rather, that there is an obligation imposed to disclose such additional purposes); *id.* § 1798.120(a) (providing that consumers have the right to opt out from personal information being sold to third parties).

126. See Townley, Morrison & Yeung, *supra* note 4, at 712.

127. See *id.*

ing may make the practice less unfair than when it remains secretive, but it does not necessarily make the practice fair altogether. Also, a *growing awareness* of use of personal information may be an elusive concept, as consumers will hardly ever be fully aware of the magnitude of personal information used in any given context, and arguably regardless of how detailed the disclosure of personal data use and collection would be.<sup>128</sup> As sophistication increases in the collection and processing of personal information, coupled with the lack of transparency surrounding such commercial practices, the disproportionate and undue advantage it will give to suppliers to the detriment of consumers will likely persist, regardless of some level of awareness of the practice by consumers.

At a substantive level, the (un)fairness of personalized pricing may simply boil down to this: it is hard to justify charging different prices to two persons for the exact same product strictly based on each person's ability to pay, without some greater goal (e.g., improving social equality) or benefit to the consumer (e.g., improved product), and when the main, if not sole motivator, is to improve the supplier's bottom line.<sup>129</sup> Also, the intrusiveness of the process that enables the practice (i.e., collecting and processing personal data), or that someone is "sizing your wallet," raises important questions of fairness. It accentuates even more existing asymmetries of product knowledge, bargaining power, etc. between buyer and seller.

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128. See OECD SUMMARIES OF CONTRIBUTIONS, *supra* note 99, at 14 (quoting the U.K. submission: "Transparency alone will not necessarily adequately address the risk of consumer harm and the quality of disclosure is vital. The disclosure of information on personalization will serve little positive purpose if the information provided to the consumer is misleading, confusing or otherwise not comprehensible to the consumer and/or does not give the consumer a real choice (for example, the disclosure is made very late in the transactional process)").

129. See EZRACHI & STUCKE, *supra* note 4, at 122 (explaining when discriminatory pricing might be acceptable: if there is a social goal, if it improves the overall product, and if it is transparent); see also OECD COMPETITION COMMITTEE, *supra* note 1, at 24 ("While consumers certainly differ in their willingness to pay, it is not clear whether this should justify consumers being charged different prices for the same or very similar product. Moreover, the perception of what is fair may depend not only on the specific beliefs of the consumers, but also on the dimensions upon which consumers are subject to discrimination.").

At a macro level, if algorithmic personalized pricing leads to an overall decrease in consumer welfare while increasing supplier welfare, fairness may tie into a distributive justice argument, not as consumer-to-consumer as sometimes invoked in support of discriminatory pricing, but as between consumer and supplier.<sup>130</sup>

### 3. *Transparency and Autonomy*

Transparency is connected to fairness. As discussed above, although transparency may not make a practice fair at a substantive level, a lack of transparency to consumers may make a commercial transaction more unfair.<sup>131</sup> Transparency comes into play on two fronts: first, as to whether personalized pricing is taking place; and second, with respect to the scope of access to and of use of consumer personal data. Transparency on the collection of personal data will not necessarily make a commercial practice comply with privacy requirements when the collection fails to meet the proportionality requirement—i.e., the amount of personal data is not justified relative to the intended purpose of the collection.<sup>132</sup>

We value transparency in consumer transactions and the disclosure requirements associated with it, as they are perceived as promoting consumer autonomy. For instance, clear, simple, and accurate product labels shorten search costs and allow consumers to differentiate between products and make informed choices that suit their needs. Disclosure requirement laws, such as some privacy regulations, are founded on a view of promoting consumer choice and autonomy.<sup>133</sup> However, transparency does not necessarily allow consumers to exercise their autonomy when they are left with limited or unattractive alternatives, when they do not understand or do not agree to the consequences of what is being disclosed, or worse, when

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130. See generally Rory Van Loo, *Broadening Consumer Law: Competition, Protection, and Distribution*, 95 NOTRE DAME L. REV. 211 (2019) (arguing that macroeconomic distribution needs to become a more explicit goal of consumer law).

131. See *supra* Section V.C.2 (detailing fairness and privacy).

132. See PIPEDA, *supra* note 125, § 6.1.

133. See, e.g., CCPA, *supra* note 39, §§ 1798.100(b), 1798.120(a) (requiring businesses to disclose the type and purpose of personal information they use or sell to third parties, with a consumer right to opt out for personal information sold to third parties).

they should not even be given the choice that is presented to them in the guise of normalcy and respectability.<sup>134</sup> Being transparent to consumers about their personal data being used to set personalized pricing potentially raises all of these concerns and is suboptimal when it comes to promoting consumers' autonomy. To the extent that the practice raises important equality and fairness issues, the choice of allowing personalized pricing to take place should arguably not be given to consumers in the first place.

In sum, a presumption of being treated equally a priori, although not absolute, should be considered when evaluating the adequacy of algorithmic personalized pricing and to a greater extent than with respect to other forms of price discrimination that are not related to consumers' individual characteristics. The practice also raises issues of fairness when there is no valid justification (e.g., increasing social equality) or benefit to the consumers, compounded by the intrusiveness of the access and use of consumers' personal information that are required to practice algorithmic personalized pricing. More transparency about the practice and level of personal information taken will not make algorithmic personalized pricing fair, as it will not cure the substantive concerns about the commercial practice; however, removing the cloud of secrecy through disclosing the practice to consumers will make it somewhat less unfair at this level. Potential encroachments of consumers' privacy are closely connected to values of fairness and transparency. In considering all of these underlying values and their possible erosion, Ezrachi and Stucke invite us to think about greater societal harm beyond our individual pocketbook, such as the social environment trust in firms and marketplace,<sup>135</sup> to which one may add consumer market sus-

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134. See generally Luguri & Strahilevitz, *supra* note 76; U.S. Complaint, *supra* note 36, para. 9 ("At least tens of millions of American users relied on Facebook's deceptive privacy settings and statements to restrict the sharing of their information to their Facebook Friends, when, in fact, third-party developers could access and collect their data through their Friends' use of third-party developers' apps.").

135. EZRACHI & STUCKE, *supra* note 4, at 129; U.K. OFFICE OF FAIR TRADING, PERSONALISED PRICING - INCREASING TRANSPARENCY TO IMPROVE TRUST 4, 24 (2013), [http://webarchive.nationalarchives.gov.uk/20140402142426/http://www.offt.gov.uk/shared\\_offt/markets-work/personalised-pricing/oft1489.pdf](http://webarchive.nationalarchives.gov.uk/20140402142426/http://www.offt.gov.uk/shared_offt/markets-work/personalised-pricing/oft1489.pdf) (warning about the general distrust that personalized pricing practices could create in the marketplace and emphasizing the lack of transparency as an

tainability, and overall consumers' levels of indebtedness and a rise in inequality.

## VI.

### REGULATORY AVENUES TO CONSIDER

The analysis conducted in this article on the normative considerations surrounding algorithmic personalized pricing leads to three possible regulatory approaches. The first approach is to delineate condemnable aspects of personalized pricing at a substantive level that should be banned. The second approach is not to ban any form of algorithmic personalized pricing per se but to require stringent disclosure obligations from suppliers to consumers about suppliers' use of consumers' personal data in setting differential prices, with a genuine and valid opportunity for consumers to opt out of this practice. The third avenue is the status quo—i.e., to leave the regulation of personalized pricing to the traditional approaches of competition, privacy, contract, consumer protection, and antidiscrimination laws. This part outlines why the first approach—i.e., setting bright-line rules around acceptable forms of personalized pricing—is preferable.

#### A. *Ban on Certain Forms of Algorithmic Personalized Pricing*

In the absence of personalized pricing practices that amount to an anticompetitive practice (e.g., abuse of a dominant position, collusion, price fixing), are discriminatory under human rights laws, or involve some form of misrepresentation in contract law, specific bans on personalized pricing are not frequently proposed.<sup>136</sup> This is hardly surprising, as firms' decisions regarding pricing practices have traditionally been regarded, in competitive markets at least, as better left unattended, subjected as they are to market forces.<sup>137</sup> However, concerns raised in this article about consumer equality,

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important contributor of such distrust); OECD COMPETITION COMMITTEE, *supra* note 1, at 26.

136. See Wagner & Eidenmüller, *supra* note 4, at 589–90 (viewing a ban on personalized pricing as too extreme, given that the main effect of personalized pricing is to lower consumer surplus); OECD U.S. SUBMISSION, *supra* note 85, at 2, 6.

137. See Miller, *supra* note 4, at 68; OECD U.S. SUBMISSION, *supra* note 85, at 4; SICILIANI, RIEFA & GAMPER, *supra* note 114, at 92.

fairness, privacy, and transparency regarding personalized pricing, amid the rapid evolution of personal data algorithmic analytics in e-commerce, should lead to reconsidering bans as a justifiable option in certain circumstances.

The following parameters should inform the justifications and methods for prohibiting certain practices of personalized pricing. Personalized pricing should be banned to the extent that it involves the intrusive use of consumers' personal information with the sole (or predominant) purpose to maximize suppliers' profits, with no justification based on different qualities of product attributes, other benefit to the consumer, or on suppliers' legitimate requirements (e.g., variation in production and distribution costs).<sup>138</sup> The underlying principles that justify this ban include (1) a starting point of equality between consumers, regardless of their personal characteristics, given the arbitrariness that comes with such differentiations (as opposed to exigencies justifying discrimination on the basis of production, supply costs, different features, or ranges of product quality); (2) a lack of demonstrated benefit to competition; (3) a lack of transparency toward consumers and the public in the amount and the purpose of personal data collection; (4) the contravention of privacy principles of proportionality in the amount of collected personal information relative to its intended purpose; (5) consumers' reasonable expectations and understanding regarding collection and handling of their personal information (regardless of presumed consent); and (6) accumulation of supplier knowledge deepening asymmetry of power between suppliers and consumers.<sup>139</sup> Last but not least, economic efficiency and maintaining consumers'

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138. The lack of supplier-consumer reciprocity and proportionality in the amount of personal information used by the supplier relative to product or service being supplied, from which unfairness arises, goes above and beyond algorithmic personalized pricing; it is one defining trait of the personal data extraction economy. See ZUBOFF, *supra* note 26, at 10, 94.

139. See Miller, *supra* note 4, at 80 (discussing consumer deception arising from their mistaken assumptions about their comparative position in the market and relative advantages of one bargain over another and noting that, in this light, "the purpose of consumer information regulation is to protect shoppers' ability to resist the growing power of the retailers to shape marketplace behavior"); see also Bar-Gill, *supra* note 4, at 242 (arguing that personalized pricing should be curbed in instances when it "targets misperception-based [willingness to pay] in addition to preference-based [willingness to pay].").



trust in the marketplace further support the ban for those forms of personalized pricing that lead to inefficiencies and distrust, and may give rise to a vacuous, unproductive technological arms race between suppliers and consumers, resulting in a wasteful use of resources.<sup>140</sup> These factors combined or individually (depending on their gravity) contain enough elements to justify banning the practice of personalized pricing at a substantive level, as among the camp of unfair commercial practices and a potential breach of privacy law. The ban could take various forms, including singling out as an unfair commercial practice specific data collection and uses from ever forming part of any pricing offer.<sup>141</sup>

There is no valid reason to wait for more empirical evidence on the extent and degree to which algorithmic personalized pricing is happening. A principled approach should guide the next generation of consumer law and policy to properly address the proliferation of algorithmic big data analytics in the digital marketplace for the greater benefit of all its participants.

The main pitfall of the outright ban proposed here includes the loopholes of various interpretations of the ban's contours, as well as the difficulty of detecting noncompliance. Paradoxically, a regulatory option that focuses on the procedural aspects of personalized pricing without banning it (i.e., mandating the disclosure of how personal data is collected and used for pricing purposes) could in the end benefit consumers more positively than an outright ban of the practice. Although not the preferred route, as it fails to address important concerns around algorithmic personalized pricing at the substantive level, the regulatory avenue of mandatory disclosure is worth exploring further.

#### B. *Mandatory Disclosure*

Short of an outright ban of algorithmic personalized pricing as described above, mandating suppliers to disclose to consumers that they are collecting and using their personal data for the purpose of their pricing offerings is one avenue to address at a procedural level the unfairness arising from the lack of transparency. This approach also addresses consumer de-

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140. See Miller, *supra* note 4, at 66.

141. See *id.* at 104.

ception arising from the collection of personal information for personalized pricing purposes.<sup>142</sup> Already in place in the European Union,<sup>143</sup> and more recently in California,<sup>144</sup> this model of privacy regulation is often invoked as the preferred means to tackle problematic aspects of algorithmic personalized pricing.<sup>145</sup> A requirement to disclose the practice of personalized pricing has at least two benefits, assuming firms' adequate compliance with the requirement and the relative effectiveness

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142. See OECD COMPETITION COMMITTEE, *supra* note 1, at 38 (recommendations of mandatory disclosure); Miller, *supra* note 4, at 83 (discussing disclosure requirements grounded in principle of consumer autonomy: "The principle of consumer autonomy justifies empowering consumers to know how their personal identity and buying choices impact their position in the market").

143. See EU GDPR, *supra* note 38, § 13(1)(c) (stating that, when personal data is collected, it imposes at the time of collection a "duty to disclose the purposes of the processing for which the personal data are intended as well as the legal basis for the processing"); Zuiderveen Borgesius & Poort, *supra* note 4, at 356 (describing the effect of the EU GDPR as applying to price discrimination and forcing suppliers to disclose the practice in clear and unequivocal terms to their consumers, as opposed to general terms on the collection of personal data).

144. See CCPA, *supra* note 39, § 1798.100(b) (requiring businesses that collect consumer personal information to disclose categories of personal information and purposes for which personal information will be used); *id.* § 1798.110(a)(3) (imposing, at the consumer's request, an obligation to disclose the business or commercial purpose for collecting or selling personal information).

145. See U.S. PRESIDENT EXECUTIVE OFFICE, *supra* note 33, at 17; OECD COMPETITION COMMITTEE, *supra* note 1, at 38; OECD SUMMARIES OF CONTRIBUTIONS, *supra* note 99, at 14 (UK submission); EZRACHI & STUCKE, *supra* note 4, at 227 (suggesting clearer disclosure of use of personal information such as "(1) pop-up windows that inform us when and what info is being harvested and when being tracked; (2) clear indication of when personalized prices are displayed"); Miller, *supra* note 4, at 83; Townley, Morrison & Yeung, *supra* note 4, at 715 (suggesting the minimum requirements of a disclosure regime "inform consumers in advance: (i) that prices offered online to any customer may differ from those offered to other customers; (ii) that their personal digital data, including data acquired from continuous tracking of their online behavior, may be used to construct consumer profiles that form the operative basis for determining the prices at which goods will be offered to them, and (iii) of the full range of variables which affect the algorithmic determination of how the prices of goods and services are calculated (this need not entail disclosure of the underlying algorithm itself, nor the costs associated with production of the relevant good/service - only of the algorithmic variables and the directions in which they can be expected to move)"); Wagner & Eidenmüller, *supra* note 4, at 584.

of the disclosure in light of inherent limits of any information disclosure requirement.<sup>146</sup> First, disclosure would lift the veil on mostly concealed practices that would enable more focused data gathering to study personalized pricing on the various legal grounds reviewed in this article. Second, one may surmise that, considering the marked disdain consumers have toward the practice, a disclosure requirement could put a significant halt to the practice of personalized pricing altogether.<sup>147</sup>

Algorithmically “sizing one’s wallet” may entail a high level of intrusion into the consumer’s privacy that may understandably come out as disproportionate and unjustified to many consumers when the intended purpose is to set the optimal price for suppliers. As a result, disclosing personalized pricing may not be the key to making personalized pricing fair or acceptable,<sup>148</sup> as it may stop the practice from occurring altogether. If compelled to disclose the practice, suppliers will likely be less inclined to apply personalized pricing,<sup>149</sup> assuming that any regulation mandating disclosure would be efficient through compliance and adequate enforcement.

The traditional legal landscape would continue to apply, as augmented by the mandatory disclosure requirement proposed here. As a subset of alternatives, the regulatory avenue of mandatory unequivocal disclosure of personalized pricing could coexist with the ban of some forms of personalized pricing proposed earlier, in that it could apply to all other forms of personalized pricing not covered by the ban. This would promote greater transparency in the marketplace. Such mandatory disclosure would need to be constructed in a way that does not encourage collusion among competitors.<sup>150</sup>

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146. See OECD COMPETITION COMMITTEE, *supra* note 1, at 37–39; OECD SUMMARIES OF CONTRIBUTIONS, *supra* note 99, at 14 (UK submission); see also EZRACHI & STUCKE, *supra* note 4, at 226 (“the notice-and-consent privacy model is broken.”); Wagner & Eidenmüller, *supra* note 4, at 604.

147. See *supra* Part III.

148. Transparency is referred to as one of the requirements to make personalized pricing acceptable. See, e.g., EZRACHI & STUCKE, *supra* note 4, at 122.

149. See *supra* Part III.

150. OECD COMPETITION COMMITTEE, *supra* note 1, at 38; see also EZRACHI & STUCKE, *supra* note 4, at 35–81 for a detailed analysis of the extent to which the use of algorithms may facilitate the creation of cartels. See generally Terrell McSweeney & Brian O’Dea, *The Implications of Algorithmic Pricing for Coordinated Effects Analysis and Price Discrimination Markets in Antitrust Enforce-*

Proponents of mandatory disclosure are also quick to point out the shortcomings and limited effectiveness of any form of disclosure to consumers in an environment of information overkill.<sup>151</sup> To be more effective, the disclosure about the practice of personalized pricing should impose conspicuous,<sup>152</sup> clear, and unequivocal terms. It should also give consumers the ability to opt out<sup>153</sup>—i.e., to still be able to purchase the product, with a clear explanation of the consequences of that option.

These seemingly innocuous disclosure requirements lay bare the uneasiness that suppliers will most likely experience in the process. Although this approach appears to be sound and legitimate by ensuring greater transparency while offering alternative options to consumers, it is hard to conceptualize a genuine opting-out scenario whereby consumers can still purchase a product without having their personal data collected in the pricing process. The choice to opt out is more likely to become a decision to refrain from purchasing the

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*ment*, 32 Antitrust 75 (2017); Ashwin Ittoo & Nicolas Petit, *Algorithmic Pricing Agents and Tacit Collusion: A Technological Perspective*, in *L'INTELLIGENCE ARTIFICIELLE ET LE DROIT* 241 (Hervé Jacquemin & Alexandre de Streel eds., 2017).

151. OECD COMPETITION COMMITTEE, *supra* note 1, at 38; OECD SUMMARIES OF CONTRIBUTIONS, *supra* note 99, at 14 (UK Submission stating: “Transparency alone will not necessarily adequately address the risk of consumer harm and the quality of disclosure is vital. The disclosure of information on personalization will serve little positive purpose if the information provided to the consumer is misleading, confusing or otherwise not comprehensible to the consumer and/or does not give the consumer a real choice (for example, the disclosure is made very late in the transactional process).”); *see also* EZRACHI & STUCKE, *supra* note 4, at 226 (“[T]he notice-and-consent privacy model is broken.”); Wagner & Eidenmüller, *supra* note 4, at 604.

152. *See* EZRACHI & STUCKE, *supra* note 4, at 227 (citing specific pop-up windows with brief notification as opposed to buried lengthy terms of service as one possible approach).

153. *See, e.g.*, Wagner & Eidenmüller, *supra* note 4, at 590–91, 605–06; EU GDPR, *supra* note 38, § 21 (granting a right for data subjects to object to the collection of personal data, including when personal data is collected for marketing purposes, and for the removal of such personal data processing); CCPA, *supra* note 39, § 1798.120(a) (giving consumers the right to opt out, but only with respect to their personal information being sold to third parties); *Id.* § 1798.125 (providing nondiscrimination safeguards for consumers electing to opt out).

product altogether.<sup>154</sup> Indeed, it is hard to conceive a supplier pricing model that would employ personalized pricing with some and not with others. This difficulty to accommodate reasonable consumer requirements is another indicator that puts to the test the legitimacy of deeper forms of personalized pricing. What would disclosure look like? How can a fair alternative to personalized pricing exist without making the whole practice crumble altogether?

### C. *Status Quo*

The last and least preferred regulatory avenue is to rely on the traditional regulatory frameworks in place with no change whatsoever in any given area of law, either because of a perceived lack of evidence on the effects of algorithmic personalized pricing, or because of faith that the current regulatory framework can address valid concerns for consumers.<sup>155</sup>

The concerns with personalized pricing, substantive arguments to intervene with at least some forms of it, and the benefits of setting bright-line rules where firms take advantage of gray areas all weigh against taking the status quo approach to algorithmic personalized pricing. Lawmakers and governments must be willing to acknowledge that significant transformations of methods of doing business call for a review of intrusive and abusive practices against which consumers need adequate protection for a sustainable digital marketplace.<sup>156</sup> In this realm, the bigger obstacle for legislative reform may not

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154. *But see* CCPA, *supra* note 39, § 1798.125 (providing nondiscrimination safeguards for consumers electing to opt out (e.g., with respect to quality of service received), but only with respect to their personal information being sold to third parties).

155. *See* OECD U.S. SUBMISSION, *supra* note 85, at 2, 6 (positing that, subject to violating antitrust law (e.g., collusion) or consumer law (e.g., misrepresenting that discriminatory pricing is not taking place) as such, discriminatory pricing warrants no justification to intervene); *see also* EZRACHI & STUCKE, *supra* note 4, at 127–28 (on how issues of discriminatory pricing, even if potentially illegal, are low on competition agencies' enforcement agenda, particularly in a U.S. context).

156. *See* Odlyzko, *supra* note 6, at 365 (noting the likelihood that many governments are likely not to intervene and support suppliers' indiscriminate use of personal data for the advantages that it may provide them).

be the lack of available solutions so much as vantage points tainted by entrenched ideology and lack of political will.<sup>157</sup>

#### D. *Other Options*

In addition to the possible avenues for the regulation of personalized pricing explored in this section, other approaches include the mandatory disclosure of a floor price, in keeping with traditional labeling law requirements,<sup>158</sup> and price caps (or personalized price caps).<sup>159</sup> Another big-data regulatory framework proposal that extends beyond issues specific to algorithmic personalized pricing includes “privacy by design.” Under this proposed framework, privacy would be the default rule, and consumers would have to opt in for their data to be tracked online, with express meaningful notifications and consent required along the way.<sup>160</sup> Such regulatory design would address the procedural unfairness and lack of transparency discussed earlier. It could also reduce the frequency of personalized pricing and similar commercial practices. Yet it would not solve personalized pricing at a substantive level as it would still allow the practice to occur. While “privacy by design” frameworks rely on noble goals that seek to safeguard consumer privacy, the two-track opt-in stay-out regime that they would create gives rise to practical considerations that call into question their possible future application and viability.<sup>161</sup>

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157. EZRACHI & STUCKE, *supra* note 4, at 231–32 (pointing out challenges to regulatory reform: (i) ideology around how markets operate and the goals of competition law; (ii) political will and possible effects of intellectual and regulatory capture; (iii) lack of tools to address complex issues; and (iv) a cautionary approach in light of legal uncertainty, enforcement costs, uncertainty of effects of new regulatory designs, and possible effects of regulatory intervention).

158. *See, e.g.*, Miller, *supra* note 4, at 80–81 (arguing that such a regulatory requirement might eliminate legitimate forms of personalized pricing—e.g., the ones based on supplier legitimate exigencies as opposed to those based predominantly on consumers’ personal characteristics).

159. *See* Bar-Gill, *supra* note 4, at 243 (noting that price caps provide a more appropriate response to personalized pricing); *see also* Townley, Morrison & Yeung, *supra* note 4, at 720 (suggesting that price caps should only be used where there is sustained evidence of consumer harm in specific industries and other remedies have failed).

160. *See* EZRACHI & STUCKE, *supra* note 4, at 226–27.

161. *See supra* Section VI.B.

Algorithm audits of various forms are frequently offered as a possible solution to “crack the code” or to ensure certain legal controls.<sup>162</sup> Although some forms of algorithm audits have potential,<sup>163</sup> the complexity of the task, time and expertise required, and the potential of meaningful outcomes, raise several questions and skepticism about their effectiveness.<sup>164</sup>

#### CONCLUDING REMARKS

The conflicting norms, principles, and values around algorithmic personalized pricing analyzed in this article raise important fairness concerns when looking at this commercial practice from a consumer perspective. Many other areas of inquiry have not been explored in detail, including how greater cohesion between privacy, consumer, commercial, antitrust, and antidiscrimination laws and their enforcement may better address the many challenges raised by the ubiquitous use of consumer personal data in all spheres of life.

The preferred regulatory approach to algorithmic personalized pricing proposed in this article is to ban certain forms of this commercial practice to address the fairness concerns at a substantive level. This position is in stark contrast with the regulatory laissez-faire approach that has prevailed so far on the use of personal data in e-commerce, relying heavily on the rhetoric of consumer convenience and access to innovation, with little oversight and few boundaries ensuring consumer fairness and privacy along the way.

The often-preferred solution of mandatory disclosure would not solve the issues raised at a substantive level. Disclosure requirements may have the positive effect of limiting the practice of algorithmic personalized pricing altogether, given that suppliers are well aware of the aversion consumers generally have toward various forms of differential pricing. However,

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162. See EZRACHI & STUCKE, *supra* note 4, at 230 (noting the possibility of monitoring firms’ algorithms as another method of promoting greater transparency); see also Van Loo, *supra* note 11, at 1383–86 (discussing the merits of developing a firm supervision program conducted by the FTC).

163. For instance, audits making suppliers accountable for complying with certain output requirements may be more fruitful than lengthy reviews of lines of code.

164. See EZRACHI & STUCKE, *supra* note 4, at 230–31; see also Wagner & Eidenmüller, *supra* note 4, at 603–04.

this assumes certain safeguards are in place, which may be difficult to implement in practice.

The parameters and justifications that lead to recommending a ban of certain forms of algorithmic personalized pricing should inform the regulation of the use of consumer personal data beyond algorithmic personalized pricing. Those parameters are (1) a starting point of equality between consumers regardless of their personal characteristics, given the arbitrariness that comes with such differentiations (when not based on legitimate product attributes, operations, or supply exigencies justifying discrimination); (2) the level of proportionality and reciprocity regarding the amount of intrusion into consumers' personal data relative to the intended purpose of the use of personal data and benefit to consumers, touching upon privacy protection principles and benefits to competition (or lack thereof); (3) transparency toward consumers and the public in the amount and purpose of personal data collected; (4) consumers' reasonable expectations and understanding regarding collection and handling of their personal information; and (5) accumulation of supplier knowledge that deepens asymmetries of power between suppliers and consumers. Finally, responding to consumer-citizens' reasonable expectations of efficiency in the digital marketplace and maintaining greater trust in the networked society should be top of mind for law- and policymakers and relevant regulatory agencies.