

# Personalized Pricing Using Payment Data: Legality and Limits under European Union and Luxembourg Law

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## Abstract

With the transposition of Directive (EU) 2015/2366 (PSD2) into Luxembourg law, payment service providers may have access to consumer payment data and share these data with third parties for the purposes of personalized pricing. In this article, the author analyses the legality and the limits of personalized pricing using payment data under European Union and Luxembourg law, focusing on consumer e-commerce markets. To this end, the author reviews economic studies on personalized pricing and consumer behavior and analyses the application of consumer protection, data protection, anti-discrimination and competition rules to the practice. Subsequently, the author investigates the limits imposed on personalized pricing in certain circumstances and proposes to adopt a data-driven approach to the regulation of the practice.

## Keywords

Pricing, payment services, data protection, personal data, discrimination, algorithms, consumer protection, personalization, profiling, economics

## 1. Introduction

Companies are continually seeking ways to optimize the pricing of products in individual exchanges. Today, the volume of generated and collected personal data is enormous, facilitated by Internet networks and the large-scale production of data-collecting networked devices owned by consumers.<sup>2</sup> Given the availability and informational value of personal data, using personal data for pricing purposes in consumer e-commerce is becoming more attractive and some strategists even consider the

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<sup>2</sup> Rafi Mohammed, *How Retailers Use Personalized Prices to Test What You're Willing to Pay*, Harvard Business Review <<https://hbr.org/2017/10/how-retailers-use-personalized-prices-to-test-what-youre-willing-to-pay>> (accessed 30 July 2019); The Council of Economic Advisers of the United States, *Big Data and Differential Pricing* (2015), 8.

practice a ‘competitive necessity’.<sup>3</sup> The transposition of Directive (EU) 2015/2366 on payment services, with the adoption of the Luxembourg law of 10 November 2009 on payment services (PSL), means that payment service providers may now have access to payment data of consumers, provided the latter grant their consent.<sup>4</sup> Subject to such consent, payment service providers can in turn share the payment data with third parties for the purposes of monetization, including for personalized pricing.

The aim of this article is to analyse the application of the laws and regulations of the European Union and the Grand Duchy of Luxembourg to personalized pricing and to investigate issues arising from such application. In section 2, the notions of personalized pricing and payment data are defined, followed by a review of economic studies relevant to personalized pricing in section 3. The analysis proceeds with the application of the laws and regulations to personalized pricing in section 4. In section 5, the analysis is extended to an exploration of the limits on personalized pricing imposed by the laws and regulations in certain circumstances, such as market dominance and contingent pricing. Section 6 presents the conclusions of the analysis and recommendations.

The main contribution of the article to the existing body of literature is a comprehensive analysis of personalized pricing using *payment data*. While several commentators have discussed personalized pricing using personal data more generally, a comprehensive analysis involving payment data has not yet been undertaken. For the purposes of this analysis, the article will consider a hypothetical case, involving a consumer who is a Luxembourg resident, who has an account with a Luxembourg-based credit institution (**Bank**) which can be accessed online. The consumer accesses the account via a Luxembourg-based third-party payment services provider (**TPP**). The TPP shares the payment data with a Luxembourg-based company which offers products to the consumer on its website and which has not entered into any contractual relationship with the consumer or the TPP. The company is also the seller of the product, which involves any good or service.

The scope of this article is limited to personalized pricing using payment data. This limitation implies that an in-depth analysis of the modalities of price personalization and communication, as well as personalized pricing using other personal data, is out of scope. The analysis is further limited to competitive markets for products not subject to special regulations which impact the companies’ pricing freedom. Therefore, markets subject to sectorial price regulations, such as financial services, insurance, telecommunications, pharmaceuticals, energy and transportation, are excluded from the analysis. Finally, the analysis exclusively covers the use of payment data and the personal characteristics which are inferred from those data. Hence, personalized pricing using payment data will simply be referred to as ‘personalized pricing’.

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<sup>3</sup> Boston Consulting Group, *Why Progressive Pricing Is Becoming a Competitive Necessity*, 17 January 2019 <<https://www.bcg.com/publications/2019/why-progressive-pricing-becoming-competitive-necessity.aspx>> (accessed 30 July 2019).

<sup>4</sup> *Loi du 10 novembre 2009 relative aux services de paiement, à l’activité d’établissement de monnaie électronique et au caractère définitif du règlement dans les systèmes de paiement et les systèmes de règlement des opérations sur titres*, N° 215 Mémorial A (2009).

## 2. Personalized Pricing

### 2.1. Defining Personalized Pricing

In essence, personalized pricing is setting the price of a product offered by a company to a consumer equal to that consumer's willingness-to-pay (WTP) for that product using personal characteristics or past behaviours of that consumer,<sup>5</sup> with the aim to maximize profits.<sup>6</sup> The WTP is the value of the product to the customer derived from the perceived benefits of its features, as estimated using those personal characteristics or past behaviours<sup>7</sup>. Therefore, personalized pricing is a form of value-based pricing, which is one of the three main pricing approaches, next to cost-based pricing and competition-based pricing.<sup>8</sup> Personalized pricing is the opposite of *uniform* pricing, a pricing approach in which each consumer is offered the same price.<sup>9</sup>

Since personalized pricing involves charging different prices for similar products with the same marginal cost, personalized pricing is a form of direct (or first-degree) price discrimination.<sup>10</sup> To be able to engage in personalized pricing, a company must (1) have some degree of market power and (2) be able to observe those (different) personal characteristics or past behaviours, and consumers must not be able to engage in arbitrage (i.e. re-sell products on secondary markets).<sup>11</sup> Market power plays a key role. In a perfectly competitive and fully transparent market, marginal price would equal marginal cost. However, in the absence of perfect competition and full transparency, the company can engage in price discrimination and use its market power to impose higher prices on consumers.<sup>12</sup>

Personalized pricing should be distinguished from pricing based on market segmentation, which involves placing consumers in different groups – segments – such

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<sup>5</sup> Organisation for Economic Co-operation and Development, *Personalised Pricing in the Digital Era – Background Note by the Secretariat* (DAF/COMP(2018)13. 2018), 9; European Union, *Personalised Pricing in the Digital Era – Note by the European Union* (2018), 3; UK Office of Fair Trading, *The Economics of Online Personalised Pricing* (2013), 13.

<sup>6</sup> Brian Wallheimer, *Are you ready for personalized pricing*, Chicago Booth Review, February 2018. <<https://review.chicagobooth.edu/marketing/2018/article/are-you-ready-personalized-pricing>> (accessed 30 July 2019).

<sup>7</sup> Russel Winer, *Pricing in the Digital Age: Implications for Consumer Behavior* in Michael Solomon and Tina Lowrey (eds.), *The Routledge Companion to Consumer Behavior*, 193-207 (New York: Routledge 2018).

<sup>8</sup> Philip Kotler and Gary Armstrong, *Principles of Marketing*, 309 et seq (Harlow: Pearson Education Limited 2018).

<sup>9</sup> UK Competition and Markets Authority, *Pricing Algorithms – Economic Working Paper on the Use of Algorithms to Facilitate Collusion and Personalised Pricing* (CMA94, 2018), 22.

<sup>10</sup> UK Competition and Markets Authority (n 9), 36; The Council of Economic Advisers of the United States, 4; 20. Arthur Pigou, *The Economics of Welfare*, 240 et seq (London: Macmillan, 1920); Randolph Preston McAfee, *Price Discrimination in Issues in Competition Law and Policy*, 469 and 472 (Chicago: American Bar Association 2008).

<sup>11</sup> See e.g. UK Office of Fair Trading, p. 17; European Union, p. 4.

<sup>12</sup> McAfee (n 10), 466.

as students or the elderly (indirect third-degree price discrimination).<sup>13</sup> It should also be distinguished from pricing primarily based on non-personal factors such as time or supply/demand (*dynamic pricing*).<sup>14</sup> The practice differs as well from offering a menu of options, where consumers are presented with the same set of prices and quantities and “self-select” or sort themselves into different groups (indirect second-degree price discrimination).<sup>15</sup> Finally, it should also be distinguished from pricing that reflects the differences in costs of serving those consumers, which is a form of cost-based pricing.<sup>16</sup>

Personalized pricing using payment data essentially consists of three main steps, which are explained in more detail in the Annex<sup>17</sup>. In the first step, the company collects the consumer’s payment data from the TPP and aggregates these data with other data collected on the consumer. In the second step, it constructs the consumer’s profile based on the aggregated data. In the third step, it sets the price for the product to be paid by the consumer using that personal profile, by means of a pricing algorithm. In theory, the personalized price could be unique, based on the unique set of personal characteristics or past behaviours of each consumer. However, it is common for companies to use algorithms to cluster consumers together in consumer segments on the basis of their scores on a set of shared characteristics or behaviours and assign profiles by consumer segment.

## 2.2. *The Use of Personalized Pricing*

Empirical evidence indicates that companies use personal data for personalized pricing or price discrimination. In 2012, the Wall Street Journal reported that several companies operating through e-commerce websites were using personal data to set higher prices in consumer segments with less competitors.<sup>18</sup> In the same year, the New York Times published a report showing that loyal customers were charged higher prices.<sup>19</sup> A few years later, in 2014 it was reported that a major e-commerce platform had engaged in price discrimination through ‘random price testing’.<sup>20</sup> More recently, a ride-hailing platform disclosed that it engaged in personal pricing to set its fares.<sup>21</sup> A Deloitte investigation shows that 40% of over 500 brands use personal

<sup>13</sup> Arthur Pigou (n 10); European Union (n 5), 3.

<sup>14</sup> European Union (n 5), 2. An example of dynamic pricing is Uber’s surge pricing algorithm, see Uber, *How Surge Pricing Works*, <<https://www.uber.com/drive/partner-app/how-surge-works/>> (accessed 20 November 2019).

<sup>15</sup> Organisation for Economic Co-operation and Development (n 5), 9; Arthur Pigou (n 10).

<sup>16</sup> The Council of Economic Advisers of the United States (n 2), 7.

<sup>17</sup> 33. See also Rafi Mohammed (n 2); Organisation for Economic Co-operation and Development (n 5), 10.

<sup>18</sup> Jennifer Valentino-DeVries, Jeremy Singer-Vine and Ashkan Soltani, *Websites Vary Prices, Deals Based on Users’ Information*, Wall Street Journal (2012).

<sup>19</sup> Stephanie Clifford, *Shopper Alert: Price May Drop for You Alone*, New York Times (2012).

<sup>20</sup> Michael Martinez, *Amazon Error May End ‘Dynamic Pricing’*, ABC News (2006).

<sup>21</sup> Eric Newcomer, *Uber Starts Charging What It Thinks You’re Willing to Pay*, Bloomberg News (2017).

data to tailor pricing in real time.<sup>22</sup> A team of researchers from Northeastern University, analysed 16 popular e-commerce sites and found evidence of price discrimination in nine of them.<sup>23</sup> At present, there is no indication of wide-scale adoption of personalized pricing.<sup>24</sup> Indicia of personalized pricing using payment data are more scarce. One potential reason may be that payment data are aggregated with other data. There is evidence that payment data are used to build profiles of consumers for the purposes of monetization. For example, a payment processor offers companies a software platform to gain insights on its consumers.<sup>25</sup> It has also been reported that a personal financial management application mines payment data to find behavioural insights on its users and sells market research to third parties.<sup>26</sup> Further research could uncover more widespread use, such as in the cashback applications market, where consumers must link their debit/credit card(s) to the application to get rebates from participating companies.<sup>27</sup>

### 3. Economics of Personalized Pricing

The application of the laws and regulations to personalized pricing requires consideration of the economic context of the practice. Therefore, this section takes a closer look at the economics of personalized pricing.

#### 3.1. *The Benefits of Using Payment Data for Personalized Pricing*

Payment data, more specifically records of payment transactions and account balances, must be processed in order to be useful for profiling. The question is how these data are converted into information, i.e. how *informational value* is extracted from payment data. As explained in the Annex, the purpose of the data analysis is to (1) use observed and inferred characteristics (e.g. non-observable characteristics such as interests and beliefs) (e.g. health or race) to construct a profile of the consumer, (2) model the consumer's behaviour in respect of the product parameters and (3) compute the values of the economic model in order to determine the price that the company should set.

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<sup>22</sup> Kevin Hogan, *Consumer Experience in the Retail Renaissance: How Leading Brands Build a Bedrock with Data*, <<https://www.deloittedigital.com/us/en/blog-list/2018/consumer-experience-in-the-retail-renaissance-how-leading-brand.html>> (accessed 30 July 2019).

<sup>23</sup> Aniko Hannak, Gary Soeller, David Lazer et al, *Measuring Price Discrimination and Steering on E-commerce Web Sites in IMC '14: Proceedings of the 2014 ACM Internet Measurement Conference*, 305 (New York: ACM 2014).

<sup>24</sup> It should be noted that given the variety of forms that personalized pricing may take, as explained in the Annex, it may be hard to systematically monitor the practice.

<sup>25</sup> Adyen, *ShopperDNA*, <<https://docs.adyen.com/risk-management/shopperdna/>> (accessed 30 July 2019).

<sup>26</sup> UK Payment Systems Regulator, *Discussion Paper: Data in the Payments Industry* (2018), 14.

<sup>27</sup> See for example the Quidco cashback service, <[www.quidco.com](http://www.quidco.com)> (accessed 31 July 2019).

Payment data have informational value, because they can be used to make inferences about the consumer's preferences and needs, which enable estimation of the WTP. This requires the working assumption that certain transfers or expenditures are indicative of the consumer's interests or needs. For example, a payment to a political organization could be used as an indication of affiliation with that organization's objectives, while a purchase at a fitness store may signal an interest in such fitness products. Some companies may engage in the inference of characteristics such as race, gender or lifestyle and use those inferred variables in their pricing algorithms.<sup>28</sup> As the payment data of consumers who share certain characteristics – for example place of residence, place of employment or membership of a social network – exhibit similar patterns, companies can use the data to design consumer segments and profiles.

Payment data also have informational value, because they include a record of the consumer's transaction history – i.e. past purchases – at companies and their competitors.<sup>29</sup> Purchase data are valuable to companies, because these data reveal consumers' price sensitivities and their WTP.<sup>30</sup> First, the price sensitivities of consumers who routinely purchase a particular product may be lower than other consumers, especially since they may suffer costs if they switch to an alternative product ('switching costs'). As a result, companies can use purchase data to understand the consumers' switching costs and price sensitivities and personalize prices on the basis of this information. Second, purchase data enables a company to attract consumers whose payment data reveal that they prefer purchasing products from the companies' competitors. The company has an incentive to offer a price reduction to price-sensitive consumers with low switching costs who have revealed this preference through their purchases, in order to steal or 'poach' the consumers,<sup>31</sup> while charging higher prices to consumers unable to switch. Therefore, consumers who have low switching costs or are not loyal can benefit from price discrimination, whereas other consumers could be charged higher prices. Those switching costs may be higher for some consumers than others, leading to higher prices being concentrated with consumers with similar purchases. For example, those consumers may have higher transportation costs, preventing them from shopping at brick-and-mortar stores of competitors, or face greater time constraints to search for alternative e-commerce providers.<sup>32</sup> Companies can especially

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<sup>28</sup> Riccardo Di Clemente, Miguel Luengo-Oroz, Matias Travizano et al, *Sequences of Purchases in Credit Card Data Reveal Lifestyles in Urban Populations* 8 *Nature Communications* (2018) < <https://www.nature.com/articles/s41467-018-05690-8> > (accessed 5 August 2019).

<sup>29</sup> It should be noted that this record is incomplete, as it generally only relates to one payment account and does not include transactions involving cash or other payment instruments. Moreover, payment data do not comprise product-level data.

<sup>30</sup> Lars Stole, *Price Discrimination and Competition* in *Handbook of Industrial Organization, Volume 3*, 2249 et seq (Amsterdam: North-Holland 2007); McAfee (n 10), 470.

<sup>31</sup> The practice has been described as 'paying customers to switch' or 'consumer-poaching'.

<sup>32</sup> Drew Fudenberg and J. Miguel Villas-Boas, *Behavior-Based Price Discrimination and Customer Recognition* in *Economics and Information Systems*, Volume 1, 377-433 (Bingley: Emerald Group Publishing Limited 2006).

engage in personalized pricing based on purchase history if consumers ignore the impact of their payment decisions on future offerings and they use versioning.<sup>33</sup>

### 3.2. *Effects on Economic Welfare*

Economic theory suggests that personalized pricing may have several effects on economic welfare. Personalized pricing may lead to a potential increase in output by the company, making the product available to a larger part of the population (output expansion effect).<sup>34</sup> Another effect could be more efficient product pricing by the company, as personalized pricing replaces pricing by managers who could experience cognitive biases.<sup>35</sup> The practice could also have significant distributive effects.

As to the distribution of welfare *between the company and the consumers*, personalized pricing could lead to the transfer of some or all of the consumer surplus to the company. In a competitive market the market price equals the marginal cost of production, so the difference between the consumer's WTP and the market price (consumer surplus) is distributed to the consumer. By contrast, in the case of personalized pricing, the price equals the consumer's WTP, hence, in each exchange the consumer surplus is transferred to the company (appropriation effect).<sup>36</sup> Therefore, even if more consumers are served in the case of personalized pricing, all the gains from trade may accrue to the company, which absorbs all the consumer surplus.<sup>37</sup> In addition, if the consumer's WTP is based on misperceptions of the product, the resultant mispricing could increase the size of the absorbed consumer surplus.<sup>38</sup>

As to the distribution of welfare *between consumers*, economic theory suggests that price discrimination generally leads to lower prices for price-sensitive consumers and higher prices for price-insensitive consumers.<sup>39</sup> The price-elastic consumers shop around for better deals, in contrast to the price-inelastic consumers, who do not. The differences between the prices set in different consumer segments could be significant, at least in theory.<sup>40</sup> To enable the company to offer lower prices to price-sensitive consumer segments, the company may engage in cross-subsidization, i.e. using

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<sup>33</sup> Alessandro Acquisti and Hal Varian, *Conditioning Prices on Purchase History* 24 Marketing Science (2005).

<sup>34</sup> Brian Wallheimer (n 6); Cédric de Buzonnière and Étienne Pfister, *Algorithmes tarifaires et personnalisation des prix: Quelles implications pour la concurrence?* 4 Concurrences (2017).

<sup>35</sup> The Council of Economic Advisers of the United States (n 2), 17. For a general presentation, see Jon Kleinberg, Jens Ludwig, Sendhil Mullainathan et al, *Discrimination in the Age of Algorithm* 10 Journal of Legal Analysis (2018), sections V.D. and VI.A. However, using algorithms may also introduce biases, e.g. stemming from model specification or training data.

<sup>36</sup> UK Office of Fair trading (n 5), 22-24.

<sup>37</sup> *Ibid.*

<sup>38</sup> Oren Bar-Gill, *When Demand is a Function of Both Preferences and (Mis)perceptions* 86 University of Chicago Law Review 2 (2019).

<sup>39</sup> McAfee (n 10), 481.

<sup>40</sup> In theory, some customers could end up paying twice the price charged to others. See e.g. Benjamin Shiller, *Approximating Purchase Propensities and Reservation Prices from Broad Consumer Tracking* 61(2) International Economic Review 847.

profits gained in the price-insensitive consumer segments to cover losses in the price-sensitive segments.<sup>41</sup> If the price-sensitive consumers do not have the means to pay those higher prices, they could be *de facto* excluded from access to the product.

The main conclusion is that while personalized pricing may have positive and negative welfare effects in theory, its actual impact is unclear at present.

### 3.3. *Effects on Consumer Behaviour*

Economists and empirical legal researchers have studied consumer behaviour in relation to personalized pricing in recent years. Based on their findings, it is unclear how consumers would react to widespread personalized pricing. On the one hand, certain forms of personalized pricing have been around for years, without controversy.<sup>42</sup> On the other hand, in survey studies, consumers report that personalized pricing has a negative impact on their trust and a majority of consumers considers the practice unfair.<sup>43</sup> Given these perceptions, it has been argued that consumers could limit exorbitant personalized pricing. The argument is that certain pricing approaches may offend customers' perceptions of distributive fairness, which would in turn lead them to boycott the company, imposing a costly penalty on the company's actions, which will in turn reduce the price discrimination.<sup>44</sup> One counter-argument is that personalized pricing does not always offend customers' sense of distributive fairness. For example, personalized pricing elicits a less negative response if:

- the consumer pays a lower price for the product than other consumers;<sup>45</sup>
- the price is the result of an interactive price-setting process involving the consumer (e.g. an auction);<sup>46</sup>
- price differences can be linked to different versions of the product (versioning),<sup>47</sup>

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<sup>41</sup> UK Financial Conduct Authority, *Price Discrimination and Cross-Subsidy in Financial Services* (2016), 14..

<sup>42</sup> For example, discounts for students, seniors, families or loyal customers.

<sup>43</sup> See e.g. UK Office of Fair Trading (n 5), 84 et seq, which reports empirical evidence on the impact of personalized pricing on trust; Joost Poort and Frederik Zuiderveen Borgesius, *Prijdsdiscriminatie, privacy en publieke opinie* 7 *Ars Aequi* 580 (2019); Organisation for Economic Co-Operation and Development (n 5), 24.

<sup>44</sup> For example, consumers may find it fair that affluent, less price-sensitive customers are charged a bit more than customers who may have less to spend. See the Council of Economic Advisers of the United States (n 2), 5.

<sup>45</sup> Werner Reinartz, Justus Haucap and Nico Wiegand, *Price Differentiation and Dispersion in Retailing*, 6 Selected Publications of the IFH-Förderer (2017).

<sup>46</sup> Organisation for Economic Co-Operation and Development (n 5), 25; Timothy Richards, Jura Liaukonyte and Nadia Streltskaya, *Personalized Pricing and Price Fairness* 44 *International Journal of Industrial Organization* 138 (2016) (participation in forming prices).

<sup>47</sup> Organisation for Economic Co-Operation and Development (n 5), 25.



- the price charged forms part of a combined price for an offer of multiple products (e.g. tying or bundling);<sup>48</sup>
- the consumer finds the basis for personalized pricing acceptable.<sup>49</sup>

It should be emphasized that consumer behaviour in response to personalized pricing is most likely not solely dependent on conscious information-processing. It is plausible that personalized pricing influences consumer decision-making subliminally and may trigger purchases by consumers. In several studies, it has been documented that some consumers have limited self-control over their economic decision-making in some circumstances, violating the axiom of rational intertemporal choice.<sup>50</sup> More generally, it has been posited that there are two separate cognitive systems that drive decision-making, one of which can be characterized as more conscious and the other as more driven by intuition.<sup>51</sup> Consequently, consumers may consciously evaluate the utility of a potential purchase in line with rational choice theory, but simultaneously need to restrain themselves from purchasing the product acting on their intuitions and emotions. However, since personal characteristics determine whether consumers can focus on their long-term objectives and ignore their need for immediate gratification ('control their doer'), some consumers are better able to control themselves than others<sup>52</sup>.

The intuitive system may also produce specific cognitive biases that could affect the thought processes, beliefs and behaviours of some consumers.<sup>53</sup> In the context of personalized pricing, if companies vary prices based on payment data, consumers may experience *loss aversion* as a result of being offered higher prices than their reference prices.<sup>54</sup> Another potentially relevant bias is *confirmation bias*, if consumers believe that certain transactions cause the fluctuation of personalized prices and seek to adapt their purchasing behaviour to influence the price. In both instances, consumers could make transactional decisions that deviate from the predictions of rational choice theory.

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<sup>48</sup> Andrew Odlyzko, *Privacy, Economics and Price Discrimination on the Internet*, in: *ICEC '03: Proceedings of the 5<sup>th</sup> International Conference of Electronic Commerce*, 355 (Pittsburgh: ACM 2003).

<sup>49</sup> See Timothy Richards, Jura Liaukonyte and Nadia Streletskaya (n 46), who report 'self-interested inequity aversion'. Disclosing private information in order to receive a tailored price may provide such basis.

<sup>50</sup> Richard Thaler and Hersh Shefrin, *An Economic Theory of Self-Control* 89 *Journal of Political Economy* 392 (1981); Richard Thaler, *Toward a Positive Theory of Consumer Choice* 1(1) *Journal of Economic Behavior & Organization* 39 (1980).

<sup>51</sup> Daniel Kahneman, *Thinking: Fast and Slow*, 19-86 (New York: Farrar, Strauss and Giroux 2011) (the 'controller' and the 'machine'; Richard Thaler and Cass Sunstein, *Nudge: Improving Decisions About Health, Wealth, and Happiness*, 40 et seq (London: Penguin Books 2009) (the 'planner' and the 'doer').

<sup>52</sup> Thaler and Sunstein (n 51).

<sup>53</sup> Organisation for Economic Co-Operation and Development, *Delivering Better Policies Through Behavioral Insights: New Approaches*, 64-67 (Paris: OECD Publishing 2019).

<sup>54</sup> See on loss aversion and dynamic pricing, Javad Nasiry and Ioana Popescu, *Dynamic Pricing with Loss-Averse Consumers and Peak-End Anchoring* 59(6) *Operations Research* 1361 (2011).

Based on the above, it is unclear how consumers respond to personalized pricing in practice. Consumer decision-making is a complex process and given the array of shapes and forms in which personalized pricing may appear, it is impractical to make generalizations at this point in time. While the aforementioned behavioral insights have led some commentators to promote more paternalistic consumer protection rules,<sup>55</sup> there is no conclusive evidence that consumers generally make transactional decisions that warrant similar protections. There is a need for more empirical, context-specific research in this area.

#### 4. Is the Use of Payment Data For Personalized Pricing Legal?

In this section, the use of payment data for personalized pricing is analyzed under EU and Luxembourg law. The conclusion of the analysis is that the practice is permitted, provided certain conditions and restrictions are respected.

##### 4.1. *Origination and Sharing of Payment Data by TPPs*

The hypothetical case falls within the material and territorial scope of the PSL.<sup>56</sup> Under the PSL, the consumer – in the capacity of payment services user – has the right to access the account using an account information payment service provider or a payment initiation service provider.<sup>57</sup> The TPP requires the consent of the consumer to process the consumer’s payment data in connection with the provision of payment services, which should be interpreted as contractual consent.<sup>58</sup> With said consent, the Bank – as account-servicing payment service provider – must provide the TPP with access to the account which is objective, non-discriminatory and proportional to the services of the service provider.<sup>59</sup> The current market practice is to provide such access by means of application programming interfaces (APIs).

The TPP has access to all the payment data that the client could receive directly from the bank, save for sensitive payment data.<sup>60</sup> In case of account information

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<sup>55</sup> See e.g. Maria Ioannidou, *Consumer Involvement in Private EU Competition Law Enforcement*, 13 (Oxford: Oxford University Press, 2015).

<sup>56</sup> Article 2(1) and (1bis) PSL.

<sup>57</sup> Articles 81-2(1) and 81-3(1) PSL.

<sup>58</sup> Article 105 PSL; European Data Protection Board, Letter to S in ‘t Veld, EDPB-84-2018, 5 July 2018.

<sup>59</sup> Article 57-1 PSL. Various types of payment accounts could be accessed. According the CJEU, making payment transactions to a third party from an account or of benefiting from such transactions carried out by a third party, is the ‘defining feature’ of a payment account – so not only current accounts, but also savings accounts could be considered. See C-191/17 BAA [2018] OJ C 436, paras 27-33.

<sup>60</sup> See Article 36(1)(a) and (1)(b) Commission Delegated Regulation (EU) 2018/389 of 27 November 2017 supplementing Directive (EU) 2015/2366 of the European Parliament and of the Council with regard to regulatory technical standards for strong customer authentication and common and secure open standards of communication; European Banking Authority, *Opinion on the Implementation of the RTS on SCA and CSC*, EBA-Op-2018-04 (2018), paras 17-29.

service providers, the data comprise at a minimum the data derived from payment accounts and associated payment transactions.<sup>61</sup> In principle, the TPP can access information from the consumer's designated payment accounts and associated payment transactions four times per 24 hours (other than by the user's active request), unless a higher frequency is agreed, to which the user has consented (or statutory grounds for refusal exist).<sup>62</sup>

In order to share the payment data with a company for the purposes of personalized pricing by the latter, the TPP needs additional consents. TPPs are subject to an obligation of professional secrecy, but that obligation is without prejudice to data protection rules, in particular Regulation (EU) 2016/679 (GDPR).<sup>63</sup> While the payment data do not include information on the user's identity, payment data do constitute personal information.<sup>64</sup> The data constitute information on aspects of economic behaviour relating to an *identified* person, as the TPP has identified the account holder prior to processing the data.<sup>65</sup> Therefore, the TPP must have the consumer's consent, granted in compliance with Article 6(1)(a) GDPR, to contravene its obligation of professional secrecy.<sup>66</sup>

The TPP also needs the consumer's consent for the processing of the payment data for profiling purposes. TPPs are allowed to process personal data *for the prevention, investigation and detection of payment fraud*, without the consumer's consent (Article 105 PSL). For the processing of personal data in the provision of payment services, the PSL provides that TPPs must comply with the data protection rules set out in Regulation 2018/1725 and obtain the above-mentioned contractual consent.<sup>67</sup> The processing of payment data for *all other purposes* must comply with the provisions of the GDPR. The PSL's provisions on processing of personal data can be considered as a *lex specialis* with respect to the GDPR, which is the *lex generalis*.<sup>68</sup> Since the PSL does not contain express provisions on the transfer of payment data by a TPP to a company for the purposes of profiling, the GDPR's provisions must be applied. Pursuant to the GDPR, the transfer or sharing of payment data to or with third parties

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<sup>61</sup> Article 81-3(2)(d) PSL.

<sup>62</sup> Article 36 of the Commission Delegated Regulation (EU) 2018/389 of 27 November 2017 supplementing Directive (EU) 2015/2366 of the European Parliament and of the Council with regard to regulatory technical standards for strong customer authentication and common and secure open standards of communication.

<sup>63</sup> Article 30(12) PSL (the law refers to the law of 2 August 2002, which was repealed by the law of 1 August 2018 (*Loi du 1er août 2018 portant organisation de la Commission nationale pour la protection des données et mise en œuvre du règlement (UE) 2016/679 du Parlement européen et du Conseil du 27 avril 2016*).

<sup>64</sup> EBA Opinion (n 60).

<sup>65</sup> Article 4(1) GDPR.

<sup>66</sup> It is clear that the TPP is a controller as defined in Article 4(7) GDPR.

<sup>67</sup> Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, OJ L 295, 21.11.2018, 39-98. Article 105 PSL refers to Regulation (CE) 45/2001, which has been replaced by Regulation 2018/1725.

<sup>68</sup> However, the PSL's requirement of contractual consent is additional and independent from the GDPR's regime.

for the purpose of profiling or automated decision-making requires the explicit consent of the data subject. Finally, it should be noted that the processing of the personal data of persons other than the consumer included in the payment data, i.e. ‘silent party data’, requires a separate legal basis, for example the legitimate interests of the controller *ex* Article 6(1)(f) GDPR<sup>69</sup>.

## 4.2. Personalized Pricing

### 4.2.1. The Principles of Pricing Freedom and Consumer Autonomy

Underlying the European and Luxembourg frameworks of economic regulation applicable to the hypothetical case is the principle of pricing freedom, a cornerstone of the social market economy.<sup>70</sup> Consequently, the approach of the European Commission, which is also followed by the Court of Justice of the European Union (CJEU), is to stimulate effective competition by companies in order to reduce prices and enhance product quality and innovation, which provide consumers with choice.<sup>71</sup> Similarly, the principle of pricing freedom is also codified in Article 2 of the Luxembourg law of 23 October 2011 on competition (NCL), which states that ‘the prices of goods, products and services are determined by competition’.<sup>72</sup>

Hence, companies can freely determine prices. There is no general obligation to set a fair, reasonable or just price. It is assumed that in a competitive market, a company which sets its prices too high will sell less products, as consumers will trade with companies selling their products at lower prices, which incentivizes the former companies to lower their prices. On the demand side, consumers can freely decide whether to accept prices. In fact, they are assumed to act in accordance with the information paradigm.<sup>73</sup> In this paradigm, the ‘average consumer’ is an individual who is reasonably well informed and reasonably circumspect and observant.<sup>74</sup> The assumption functions as a normative standard for the behaviour of consumers and government

<sup>69</sup> European Data Protection Board (n 58).

<sup>70</sup> Article 3 Treaty on the European Union.

<sup>71</sup> See e.g. Margrethe Vestager, ‘Competition for a Fairer Society’ (Georgetown, United States, 20 September 2016), <[https://ec.europa.eu/commission/commissioners/2014-2019/vestager/announcements/competition-fairer-society\\_en](https://ec.europa.eu/commission/commissioners/2014-2019/vestager/announcements/competition-fairer-society_en)> date accessed 5 August 2019; Rutger Claassen & Anna Gerbrandy, *Rethinking European Competition Law: From a Consumer Welfare to a Capability Approach* 12(1) Utrecht Law Review (2016). For a discussion of the relevant court cases, Paul Nihoul, ‘Freedom of Choice’: The Emergence of a Powerful Concept in European Competition Law in *Choice. A New Standard for Competition Law Analysis?* 9-40 (Concurrences Review, 2016); Ariel Ezrachi, *The Goals of EU Competition Law and the Digital Economy*, BEUC Discussion Paper (2018), 5-16. Maria Ioannidou (n 54), 26 et seq.

<sup>72</sup> Free translation of ‘Les prix des biens, produits et services sont librement déterminés par le jeu de la concurrence’.

<sup>73</sup> See e.g. Annette Nordhausen Scholes, *Behavioral Economics and the Autonomous Consumer* in *The Cambridge Yearbook of European Legal Studies, Volume 14, 2011-2012*, 297-324 (Hart Publishing, 2012); Vanessa Mak, *The Consumer in European Regulatory Private Law* in Dorota Leczykiewicz and Stephen Weatherill (eds), *The Images of the Consumer in EU Law. Legislation Free Movement and Competition Law*, 381-400 (Hart Publishing, 2016).

<sup>74</sup> Article L. 010-1 LCC; C-122/10 *Ving Sverige* [2011] OJ C 204 9, paras 22, 23, 71.

intervention in business-to-consumer markets. The average consumer is expected to generally act as a rational utility-maximizing agent, i.e. to know his or her personal interests, to analyse all the available information and to make transactional decisions which best serve those interests.<sup>75</sup> The average consumer gathers information, makes decisions in an autonomous manner and is sufficiently knowledgeable to critically assess commercial communication.<sup>76</sup> The autonomy of the average consumer implies the right to self-determination, i.e. the right to decide whether to accept the price asked for a product in an economic exchange.<sup>77</sup> Consequently, the only justification for government intervention in competitive markets is to remedy market failures.<sup>78</sup> In fact, consumer protection and competition laws can be considered as safeguards against market failures which negatively impact consumer choice.<sup>79</sup>

Notwithstanding the primacy of the information paradigm, the European and Luxembourg consumer protection frameworks acknowledge that consumer decision-making can be impaired in certain contexts or due to personal circumstances, such as cognitive or economic factors.<sup>80</sup> In the same vein, the CJEU has ruled that a consumer (1) is less attentive at times,<sup>81</sup> (2) may be misled by labelling,<sup>82</sup> (3) may be more led by impression than by direct comparison,<sup>83</sup> (4) may lack information and technical capabilities in technical sectors,<sup>84</sup> (5) may be misled by comparative advertising on prices involving shops of different sizes<sup>85</sup> and (6) can be induced to consume sugar

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<sup>75</sup> See e.g. Vanessa Mak (n 73), 384 et seq; Catalin-Gabriel Stanescu, *The Responsible Consumer in the Digital Age: On the Conceptual Shift from 'Average' to 'Responsible' Consumer and the Inadequacy of the 'Information Paradigm' in Consumer Financial Protection* 24(1) *Tilburg Law Review* 49 (2019); Bram Duivenvoorde, *The Consumer Benchmarks in the Unfair Commercial Practices Directive*, 166 (Springer International Publishing, 2015).

<sup>76</sup> Bram Duivenvoorde (n 75), 166.

<sup>77</sup> Jan Trzaskowski, *Lawful Distortion of Consumers' Economic Behaviour – Collateral Damage under the Unfair Commercial Practices Directive* 27(1) *European Business Law Review* 25 (2016).

<sup>78</sup> By way of example, for consumers some information may be too costly or cumbersome to obtain. See George Stigler, *The Economics of Information* 69(3) *Journal of Political Economy* 213. To remedy information asymmetry, consumer protection rules impose disclosure obligations on companies.

<sup>79</sup> See for a similar view, Neil Averitt, *How "Consumer Choice" Can Unify the Fields of Competition and Consumer Protection Law* in Paul Nihoul, Nicolas Charbit, Elisa Ramundo (eds.), *Choice. A New Standard for Competition Law Analysis?*, 253-264, (Institute of Competition Law, New York; 2016); Vanessa Mak (n 73), 387.

<sup>80</sup> Examples are the right of withdrawal in Directive 2011/83/EU and the notion of vulnerability in the UCPD. See 'Understanding consumer vulnerability in the EU's key markets, Factsheet DG for Justice and Consumers, February 2016.

<sup>81</sup> C-210/96 *Gut Springenheide* [1998] ECR I-04657.

<sup>82</sup> C-195/14 *Teekanne* [2015] Digital reports (Court Reports – general), para. 40.

<sup>83</sup> T-363/04 *Koipe Corporación*, [2007] ECR II-03355, para. 109.

<sup>84</sup> C-54/17 and C-55/17 *Wind Tre and Vodafone Italia*, [2018] OJ C 408, paras 52-54.

<sup>85</sup> C-562/15 *Carrefour Hypermarchés SAS* [2017] Digital reports (Court Reports – general), para 31 et seq.

by reason of espoused health claims relating to products,<sup>86</sup> to give some examples of praetorian exemptions to the information paradigm.<sup>87</sup>

The rule on personalized pricing of Directive (EU) 2019/2161 (NDD) is in line with the information paradigm.<sup>88</sup> Article 4(4)(a)(i) NDD essentially inserts an additional disclosure obligation in Directive 2011/83/EU, which stipulates that the company must inform the consumer that the price has been personalized, before the consumer is bound by a distance contract. Recital 45 NDD clarifies that since traders can personalize the price of their offers based on automated-decision making and profiling, consumers ‘should therefore be clearly informed when the price presented to them is personalized on the basis of automated decision-making, *so that they can take into account the potential risks in their purchasing decision* [emphasis added: MT]’. In other words, the consumer must be aware of the personalization and evaluate the company’s offer in consideration of the potential risk of paying a higher price for the same product than other consumers or at the company’s competitors. With the adoption of the NDD, personalized pricing is officially sanctioned as a permitted commercial practice.<sup>89</sup>

#### 4.2.2. *Conditions and Restrictions*

As personalized pricing is generally permitted under EU and Luxembourg law, the analysis now turns to the conditions and restrictions imposed on the practice.

First, consent rules apply. As explained above, the processing of payment data for the purposes of constructing a personal profile and discriminating between consumers in respect of prices falls within the material scope of the GDPR. The construction of a personal profile can be considered ‘profiling’ within the meaning of Article 4(4) GDPR.<sup>90</sup> Similarly, the combination of payment data with other personal data and price personalization using these data are forms of ‘processing’ (Article 4(2) GDPR). All these processing operations are automated within the meaning of the GDPR, and the outcomes of these operations evidently affect the consumer, as the level of the

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<sup>86</sup> T-100/15 *Dextro Energy GmbH & Co. KG v European Commission* [2016] Digital reports (Court Reports – general), para 60.

<sup>87</sup> See also Kai Purnhagen, *More Reality in the CJEU’s Interpretation of the Average Consumer Benchmark – Also More Behavioral Science in Unfair Commercial Practices* 8(2) European Journal of Risk Regulation 437.

<sup>88</sup> Directive (EU) 2019/2161 of the European Parliament and of the Council of 27 November 2019 amending Council Directive 93/13/EEC and Directives 98/6/EC, 2005/29/EC and 2011/83/EU of the European Parliament and of the Council as regards the better enforcement and modernisation of Union consumer protection rules, OJ L 328, 18.12.2019, 7-28.

<sup>89</sup> Note that in 2018, the European Commission already considered that the practice was not in violation of EU rules and that transparency obligations, supervisory enforcement powers and individual judicial remedies are sufficient consumer safeguards. Věra Jourová, Answer to query from European Parliament on behalf of European Commission (E-003971/2018, 4 October 2018); European Union (n 5), 10-11.

<sup>90</sup> See Annex.

offer price varies depending on the assigned profile.<sup>91</sup> The GDPR provides that the consumer has the right not to be subject to a decision based solely on automated processing.<sup>92</sup> Therefore, in the absence of a contract or a law as mentioned in Article 22(a) and 22(b) GDPR, these processing operations require the consumer's explicit consent.<sup>93</sup> The consumer's consent must be informed under these instruments and the information provided must be transparent and accessible, taking into consideration the specificities of the online environment.<sup>94</sup> For such consent to be informed, companies must provide additional information, such as information about the type of data which will be collected and the use of the data for automated decision-making purposes.<sup>95</sup>

Second, disclosure obligations apply. The Luxembourg *Code de la consommation* (LCC) is applicable to the relationship between the company and the consumer and contains a number of general disclosure obligations, transposing various EU consumer protection rules.<sup>96</sup> Following the transposition of Article 2(4)(a)(ii) NDD, the LCC shall include the aforementioned disclosure rule, which is an *ex post* requirement, i.e. after price personalization. By contrast, the disclosures under the GDPR and the PSL relating to the consent to processing of data must be provided on an *ex ante* basis, i.e. prior to processing. Articles L. 122-8 and L.221-2(c) LCC – transposing Directive (EU) 2011/83/EC (“CRD”) and Directive (EU) 2000/31/EC – impose the obligation on companies to provide the consumer with the indication of the total price. These LCC rules do not require the company to disclose the methodology of the pricing algorithm. However, Article L. 122-2(1)(2)(d) LCC, which transposes Article 6(d) of Directive 2005/29/EC (UCPD), does concern the methodology, as it prohibits *inter alia* misleading statements on the manner in which the price is calculated.<sup>97</sup> In addition to the LCC, the GDPR contains general disclosure obligations in respect of the

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<sup>91</sup> The algorithms may be monitored or adjusted by engineers, but the individual price-setting actions are algorithmic (c.q. autonomous) and thus performed without human intervention. See Maja Brkan and Grégory Bonnet, *Legal and Technical Feasibility of the GDPR's Quest for Explanation of Algorithmic Decisions: Of Black Boxes, White Boxes and Fata Morganas* 11 *European Journal of Risk Regulation* 18-50 (2019), 23-24, for a discussion of the notions.

<sup>92</sup> Article 22(1) GDPR.

<sup>93</sup> Article 6(1)(a) and 22(2)(c) GDPR; Article 29 Data Protection Working Party, *Guidelines on Automated Individual Decision-Making and Profiling for the Purposes of Regulation 2016/679* (WP251 rev01, 2018), 19. The European Data Protection Board endorsed these guidelines during its first plenary meeting, <[https://edpb.europa.eu/our-work-tools/general-guidance/gdpr-guidelines-recommendations-best-practices\\_en](https://edpb.europa.eu/our-work-tools/general-guidance/gdpr-guidelines-recommendations-best-practices_en)> (accessed 5 August 2019); European Union (n 5).

<sup>94</sup> Article 4(11) GDPR and recital (42). See for more details, Article 29 Working Party, *Guidelines on Transparency under Regulation 2016/679*, WP260 rev.01, 11 April 2018, and Article 29 Working Party, *Guidelines on Consent under Regulation 2016/679*, WP259 rev.01, 10 April 2018.

<sup>95</sup> Article 29 Working Party, WP259 (n 94), 12-13.

<sup>96</sup> Article L. 010-1(1) and (2) LCC.

<sup>97</sup> Directive 2005/29/EC of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market and amending Council Directive 84/450/EEC, Directives 97/7/EC, 98/27/EC and 2002/65/EC of the European Parliament and of the Council and Regulation (EC) No 2006/2004 of the European Parliament and of the Council. OJ L 149, 11.6.2005, 22-39

data processing in Articles 13 and 14. In particular, the regulation requires disclosure of meaningful information about the logic involved, as well as the significance and envisaged consequences of processing.<sup>98</sup> The latter article requires companies to disclose information on the pricing algorithm and the impact of using payment data on the prices offered to the individual.

Third, anti-discrimination rules apply. Payment data allows companies to infer the nationality or place of residence of the consumer. In this respect, Regulation (EU) 2018/302<sup>99</sup> prohibits the application by companies of different net sale prices to products on the basis of nationality, place of residence or place of establishment, applicable to electronically supplied services, other services and goods.<sup>100</sup> In addition, companies providing services cannot discriminate on the grounds of nationality or place of residence, unless justified by objective criteria.<sup>101</sup> Payment data can also be used to infer demographic and psychographic information.<sup>102</sup> Companies using this information in their pricing are limited by the law of 28 November 2006 on equal treatment, which prohibits direct or indirect discrimination on the basis of religion or beliefs, handicap, age, sexual orientation or race by natural or legal persons in Luxembourg in respect of the provision of products available to the public.<sup>103</sup> A similar law prohibits discrimination on the basis of gender.<sup>104</sup> More generally, the principle of non-discrimination as set out in Article 21 (1) and (2) of the EU Charter of Human Rights, also applies to personalized pricing.<sup>105</sup> Under these rules, direct discrimination occurs when persons in comparable situations are treated differently because of the relevant ‘protected characteristic’. Indirect discrimination designates an apparently neutral practice which particularly disadvantages people with the relevant characteristic. Indirect discrimination may be allowed if it is objectively justified by a legitimate purpose and the means of attaining that purposes are appropriate and necessary.<sup>106</sup> It is unclear whether under this balancing test, personalized pricing would be permitted under all circumstances.<sup>107</sup> Summarizing, payment data may be used to directly

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<sup>98</sup> Article 14(2)(g) GDPR.

<sup>99</sup> Regulation (EU) 2018/302 of the European Parliament and of the Council of 28 February 2018 on addressing unjustified geo-blocking and other forms of discrimination based on customers’ nationality, place of residence or place of establishment within the internal market, OJ C 463, 21.12.2018, 76-78 (Geoblocking Regulation).

<sup>100</sup> Articles 2(14) and 4 Geoblocking Regulation.

<sup>101</sup> Article 18 of the law of 24 May 2011 (*Loi du 24 mai 2011 relative aux services dans le marché intérieur*) which transposes Directive 2006/123/EC of the European Parliament and of the Council of 12 December 2006 on services in the internal market, OJ L 376, 27.12.2006, 36-68.

<sup>102</sup> See section 3.1 above.

<sup>103</sup> Articles 1(1) and 2(1)(h) of the law of 28 November 2006 on the equality of treatment.

<sup>104</sup> Articles 2(1) and 3(1) of the law of 21 December 2007 on the equality of treatment between women and men in the access to products and the provision of products.

<sup>105</sup> For the application of this principle in a labor law context, see C-555/07 *Seda Küçükdeveci v Swedex GmbH & Co. KG*. [2010] CHR I-00365.

<sup>106</sup> Article 1(2)(b) of the law of 28 November 2006 ; Article 2(2)(b) of the law of 21 December 2007.

<sup>107</sup> Frederik Zuiderveen Borgesius, *Algorithmic Decision-Making, Price Discrimination, and European Non-Discrimination Law* 31(3) European Business Law Review 401.



discriminate between consumers, but companies must respect restrictions related to nationality, place of residence and protected characteristics.

Fourth, conduct obligations apply, in particular under the rules on unfair commercial practices (**UCP rules**) and the GDPR.<sup>108</sup> The objective of the UCP rules is to protect consumers, on the assumption that they are in a weaker position than companies, particularly with regard to their level of information, rendering their decision-making vulnerable to influence from companies.<sup>109</sup> The consumer should be able to make a free choice, without the company adopting unfair conduct, the effect of which is to put pressure on the consumer such that his or her freedom of choice is significantly impaired.<sup>110</sup> Unfair commercial practices involve practices which (1) are contrary to the requirements of professional diligence and (2) materially distort, or are likely to materially distort, the average consumer's economic behaviour with regard to the product.<sup>111</sup> The assessment of a practice requires consideration of all the circumstances and the determination that the economic behaviour is materially distorted requires the finding that the ability of the consumer to make an informed decision, is appreciably impaired by the practice.<sup>112</sup>

Two remarks should be made here. First, it should be noted that the UCP rules do not prohibit companies from exercising influence over the decisions of consumers. Practices which legitimately affect the average consumer's behaviour without *materially distorting* it, i.e. which are not significant enough to *change* the decisions of the average consumer, are allowed.<sup>113</sup> Second, the UCP rules take the average consumer as a benchmark and the practice is evaluated by determining the typical reaction of the average consumer in a typical case.<sup>114</sup> The average consumer is a person who is 'reasonably well informed and reasonably observant and circumspect, taking into account social, cultural and linguistic factors'.<sup>115</sup> The vulnerability of certain consumers due to age, physical or mental infirmity or credulity must be observed, if it is reasonable to expect from the company that the distortion of their behaviour is

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<sup>108</sup> Article L. 122-1(1) LCC *et seq.* Among other obligations, the GDPR requires the company to conduct a data privacy impact assessment and to assess the consequences of its pricing practices, see Article 35 GDPR.

<sup>109</sup> C-628/17 *Prezes Urzędu Ochrony Konkurencji i Konsumentów v Orange Polska S.A.* [2019] OJ C 263, para. 36.

<sup>110</sup> *Ibid.*, par. 47.

<sup>111</sup> Article L. 122-1 LCC para. Special cases of unfair commercial practices are aggressive commercial practices (Article L. 122-5 LCC) and misleading commercial practices (Article L. 122-2 LCC). A discussion of the requirements of professional diligence is beyond the scope of the present analysis.

<sup>112</sup> Recital 7 UCPD ('full account of the context of the individual case concerned') and Article L. 121-2(3) LCC. This context includes the fact whether the company has followed the requirements of professional diligence applicable to the sector. See Article L.122-1(2) LCC and recital 20 UCPD.

<sup>113</sup> See e.g. Jan Trzaskowski (n 77), 25-49; European Commission, Commission Staff Working Document, *Guidance on the Implementation/Application of Directive 2005/29/EC on Unfair Commercial Practices*, (SWD(2016) 163 final, 2016), 22.

<sup>114</sup> See Article 122-1(2)(b) LCC and *Ordonnance en matière commerciale Ile du 17 juin 2011* N° 862/2011.

<sup>115</sup> C-628/17 (n 109), para. 30

foreseeable.<sup>116</sup> These rules have not been further clarified in Luxembourg parliamentary discussions, case law or legal doctrine.

Finally, it is worth noting that Luxembourg consumer law does not contain express rules on the assessment of price adequacy. With the transposition of Directive 93/13/EEC on unfair contract terms, the Luxembourg legislator did not extend the scope of the assessment to price adequacy, unlike certain other Member States.<sup>117</sup> While Article L. 211-2 LCC states that a clause is unfair if ‘it causes a significant imbalance in the parties’ rights and obligations arising under the contract, to the detriment of the consumer’, the price is not a subject of inquiry.<sup>118</sup>

In conclusion, under the current rules and regulations personalized pricing is permitted in principle, provided certain conditions are met and restrictions are respected by the companies. Consumers are expected to be attentive and make informed choices regarding their payment data and their purchases in order to protect their interests.

### 4.3. Issues

Despite the relatively straightforward nature of the rules on consent, disclosure and profiling, the application of these concepts is not free from non-trivial issues.

First, it may be that the consumer’s consent is not informed, as required under the GDPR. There is evidence from economic studies that a significant number of consumers do not read or understand the terms and conditions.<sup>119</sup> Consumers may simply consent to a request without considering the implications. The potential lack of informed consent applies *a fortiori* to the scope of data processing. The consumer may have a rough idea of which raw data categories are processed (e.g. IP address or cookies) but may not know which combined or inferred data is processed, leading to information asymmetry between the consumer and the company.<sup>120</sup> Uninformed consent is more likely if the information is updated after initial consent or if the consumer simply thinks that the navigation costs outweigh the benefits.<sup>121</sup> In addition, there is

<sup>116</sup> See Article 122-1(3) LCC.

<sup>117</sup> Certain Member States allow the assessment of price adequacy. See Notifications under Article 8a of Directive 93/13/EEC, <[https://ec.europa.eu/info/notifications-under-article-8a-directive-93-13-eeec\\_en](https://ec.europa.eu/info/notifications-under-article-8a-directive-93-13-eeec_en)> (accessed 1 December 2019).

<sup>118</sup> Tribunal d’arrondissement de Luxembourg, 28 March 2003, N rôle 68428, N JUDOC 99834189.

<sup>119</sup> Alessandro Acquisti, Curtis Taylor and Liad Wagner, *The Economics of Privacy* 54(2) *Journal of Economic Literature* 442 (2016). Especially if consent is cascaded, see Idris Adjerid, Alessandro Acquisti and George Loewenstein, *Choice Architecture, Framing and Cascaded Privacy Choices* 65(5) *Management Science* 1 (2018).

<sup>120</sup> Mireille Hildebrandt and Bert-Jan Koops, *The Challenges of Ambient Law and Legal Protection in the Profiling Era* 73(3) *Modern Law Review* 428 (2010); Shoshana Zuboff, *The Age of Surveillance Capitalism, The Fight for a Human Future at the New Frontier of Power*, 63 et seq (New York: Public Affairs 2019); Aliya Ram and Madhumita Murgia, *Data Brokers: Regulators Try to Rein in the ‘Privacy Deathstars’* (Financial Times 2019); UK Office of Fair Trading (n 5) (‘ways that are not transparent and where it is hard to understand what is taking place’).

<sup>121</sup> Ginger Zhe Jin, *Artificial Intelligence and Consumer Privacy*, 439 – 462 in Ajay Agrawal, Joshua Gans, and Avi Goldfarb (eds), *The Economics of Artificial Intelligence: An Agenda* (Chicago:

a growing body of literature which documents the existence of interfaces and communications designed to influence the privacy choices of consumers by nudging consumers towards consenting to data processing (dark patterns).<sup>122</sup> For example, a recent study found that price alerts are used to create a sense of urgency and speed up sales cycles.<sup>123</sup> A consumer who receives a request to provide personal data packaged in a dark pattern, for example to receive a limited-time personalized offer, may hastily consent to the request without understanding the given information.

Second, the key disclosure rules under the GDPR lack clarity. In particular, it is unclear what constitutes ‘meaningful information’ in respect of the logic of personalized pricing algorithms.<sup>124</sup> To what extent should the underlying technology be explained and to which type of individual should it be meaningful? What should be the assumed level of knowledge? According to the European Data Protection Board, the information should be sufficiently comprehensive to understand the reasons for the decision and should explain both the rationale and the computation of any score relied on by the controller, despite multiple actors or technological complexity.<sup>125</sup> When disclosing envisaged consequences, the controller should give ‘real, tangible examples of the type of possible effects’.<sup>126</sup> In case of payment data, this could be the effect of certain categories of payments or the amount of the account balance on the personalized price. The European Parliament has resolved that in order to be meaningful the disclosure should include information on training data and should allow the individual to understand and monitor decisions.<sup>127</sup> Allowing consumers to monitor decisions is evidently a more exigent disclosure standard than merely understanding the reasons. At the same time, the right to meaningful information may not adversely affect intellectual property rights and trade secrets, which limit the scope

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University of Chicago Press 2019); Susan Athey, Christian Catalini and Catherine Tucker, *The Digital Privacy Paradox: Small Money, Small Costs, Small Talk* (2017) <<http://www.nber.org/papers/w23488>> (accessed 8 August 2019).

<sup>122</sup> The term ‘dark patterns’ has been attributed to Harry Brignull. See also Arunesh Mathur, Gunes Acar, Michael Friedman et al, *Dark Patterns at Scale: Findings from a Crawl of 11K Shopping Websites*, 3(CSCW) Proceedings of the ACM on Human-Computer Interaction (2019); Forbrukerrådet, *Deceived by Design, How Tech Companies Use Dark Patterns to Discourage Us from Exercising Our Rights to Privacy* (2018) <<https://www.forbrukerradet.no/undersokelse/no-undersokelsekategori/deceived-by-design/>> (accessed 8 August 2019); Ryan Calo, *Digital Market Manipulation* 82 *George Washington Law Review* 995 (2014); See also the bill introduced on 9 April 2019 in the US Congress, S. 1084: Deceptive Experiences To Online Users Reduction Act, designed to combat the use of dark patterns.

<sup>123</sup> Mathur et al (n 122).

<sup>124</sup> See in particular Andrew Selbst and Julia Powles, *Meaningful Information and the Right to Explanation* 7(4) *International Data Privacy Law* 233 (2017); European Union Agency for Fundamental Rights, *#BigData: Discrimination in data-supported decision making* (2018), <<https://fra.europa.eu/en/publication/2018/big-data-discrimination>> (accessed 5 August 2019), at 4.

<sup>125</sup> See Article 29 Data Protection Working Party (n 93), 25; recital 58 GDPR.

<sup>126</sup> See Article 29 Data Protection Working Party (n 93), 26.

<sup>127</sup> European Parliament, *Resolution of 14 March 2017 on fundamental rights implications of big data: privacy, data protection, non-discrimination, security and law-enforcement*, <<http://www.europarl.europa.eu/>> (accessed 5 Aug. 2019), recital N.

of required disclosure.<sup>128</sup> In practice, the ability of companies to provide information on the logic is further limited because machine learning algorithms have proven to be difficult to explain, even for experts in the field. In conclusion, it is not clear to what extent companies are required to disclose information on their pricing algorithms.

A third issue concerns the drawing of inferences of personal characteristics from payment data. As discussed above, payment transactions and account balances can be used as proxies for the consumer's demographic attributes, preferences, needs and lifestyle, and companies use the inferred data to estimate the consumer's WTP and predict purchasing decisions. Analysis and prediction form the heart of profiling, but accurate profiles are hard to construct, so companies should proceed cautiously in order to avoid inaccuracies.<sup>129</sup> For example, the inferences require assumptions regarding the completeness and correctness of the data. However, those assumptions do not hold if the consumer does not make all payments with the same account or if not all payment transactions are for the consumer's benefit. Inaccuracies can arise if the consumer pays a product for another person or falls victim to payment fraud. Combining payment data with other data may not remediate this problem. Article 5(1)(d) GDPR provides that the data used in processing should be accurate and up to date, an obligation which applies to all stages of the profiling process and pricing process.<sup>130</sup> However, the application of the GDPR's provisions to inferences is unclear, introducing legal uncertainty for companies, as it remains to be seen how regulators and judges will apply the regulation to inferences from payment data.<sup>131</sup>

## 5. Limits of Using Payment Data for Personalized Pricing

While personalized pricing is expressly sanctioned in the NDD with the imposition of a sole specific disclosure requirement, no specific conduct-restricting rules have been adopted. It is therefore useful to explore whether there are any circumstances in which the personalization or the personalized price may be limited by the current laws and regulations.

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<sup>128</sup> See recital 63 GDPR and Directive (EU) 2016/943 of the European Parliament and of the Council of 8 June 2016 on the Protection of Undisclosed Know-How and Business Information (Trade Secrets) Against Their Unlawful Acquisition, Use and Disclosure, 2016 O.J. (L 157) 1; Margot Kaminski, *The Right to Explanation, Explained* 34 Berkeley Technology Law Journal 189 (2019); Sandra Wachter and Brent Mittelstadt, *A Right to Reasonable Inferences: Re-Thinking Data Protection Law in the Age of Big Data and AI* 119 Columbia Business Law Review 494 (2019).

<sup>129</sup> See Article 4(4) GDPR.

<sup>130</sup> See Article 29 Data Protection Working Party (n 93), 12.

<sup>131</sup> Sandra Wachter and Brent Mittelstadt (n 128), 515-574.

### 5.1. *Dominant Position of the Company*

If the assumption of competitiveness in the hypothetical case is relaxed, consideration must be given to EU and national competition law. Article 102 of the Treaty on the Functioning of the European Union (TFEU) prohibits the abuse of a dominant position by an undertaking within the internal market or in a substantial part of it and applies to any type of product or service.<sup>132</sup> The article provides a non-exhaustive list of examples of abusive behaviours, such as ‘directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions’ (sub (a)). Imposing excessively high prices on consumers is a form of abuse. The Court of Justice of the European Union, in *United Brands v Commission*, ruled that a price is excessive and unfair if it has ‘no reasonable relation to the economic value of the product’, in violation of 102(a) TFEU.<sup>133</sup> The assessment relies on the excessiveness of the profit margin and the unfairness of the price.<sup>134</sup> Consequently, the test has two limbs: it must be determined whether (1) the difference between the costs actually incurred and the price actually charged is excessive and (2) if so, whether a price has been imposed which is either unfair in itself or when compared to competing products.<sup>135</sup> Thus, personalized pricing by a company occupying a dominant position may be limited by Article 102 TFEU. Article 5 NCL contains a similar prohibition.

It should be noted that neither the application of Article 102 TFEU nor the application of Article 5(1) NCL to personalized pricing has been tested before the CJEU, respectively the Luxembourg courts, and that it is not clear how the rules would impact the practice.<sup>136</sup> However, in theory personalized pricing could fall within the scope of these general prohibitions of abuse of dominant position.<sup>137</sup>

### 5.2. *Contingent Pricing and Accompanying Commercial Practices*

The principle of consumer autonomy may limit personalized pricing, if the price personalization is coupled with another practice such that they collectively constitute unfair commercial practices within the meaning of the UCP rules.

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<sup>132</sup> European Union, *Excessive Pricing in Pharmaceutical Markets – Note by the European Union*, 28 November 2018, DAF/COMP/WD(2018)112, par. 1.

<sup>133</sup> 27/76 *United Brands and United Brands Continentaal v Commission* (1978), ECR 1978-00207, 250; C-177/16 *Latvijas Autoru apvienība v Konkurences padome* (2017), Digital reports. Without a dominant position, the rule does not apply. See C-177/16 *Latvijas Autoru apvienība v Konkurences padome* (2017), Digital reports, Opinion of AG Wahl, para. 48.

<sup>134</sup> European Union (n 132), 5.

<sup>135</sup> AG Wahl (n 133), 35-37. 27/76 (n 133), 252. See also Raphaël De Coninck, *Excessive Prices: An Overview of EU and National Case Law*, Concurrences (e-Competitions: Antitrust Case Laws e-Bulletin), N°86604.

<sup>136</sup> See European Union (n 5), 9-10, in respect of Article 102 TFEU.

<sup>137</sup> For example, Article 102 TFEU provides examples of abuses in the sub-paragraphs, but they should not be seen as exhaustive. See similarly, I. Graef, *Algorithms and Fairness: What Role for Competition Law in Targeting Price Discrimination Towards End Consumers* 24(3) *Columbia Journal of European Law* 541, 549.

Using payment transactions and account balances, companies could engage in personalized pricing by directly including observed or predicted payment data points in their pricing algorithms in order to tailor the price to the consumer (**contingent pricing**). For example, a company could increase or lower prices on the day of a predicted salary payment. Another example is conditioning of prices on key life events inferred from payment transactions, such as raising the price of baby clothing following observed point-of-sale transactions in baby stores or the price of a boat following pension payments.<sup>138</sup> Contingent pricing allows the company to personalize prices with precision, tailoring them to the consumer's dynamic price-sensitivity, psychology, current financial situation and other personal characteristics. As it leverages intimate personal information, contingent pricing could be *prima facie* perceived as an unfair commercial practice. Further inquiry into the UCP rules leads to the conclusion that contingent pricing should only in very specific circumstances and exclusively in combination with other commercial practices, be considered at odds with the rules.

As discussed in section 4, the objective of the UCP rules is to protect the transactional decisions of consumers against material distortion caused by actions or omissions of the company. The principle of consumer autonomy implies that those decisions must not be affected by said material distortion. In e-commerce, the consumer decides of his or her own free will to visit the company's website and can take as much time as he or she feels necessary to become familiar with the price and other terms and conditions attaching to the offer.<sup>139</sup> Assuming companies respect the NDD's disclosure obligation, the consumer who faces contingent pricing at one company can search for alternative offers from competitors and avoid accepting the higher price offered by the company.<sup>140</sup> There is no reason to believe that the transactional decision could be altered by contingent pricing or that – in case of alteration – any behavioral change is attributable to an appreciable impairment in the ability to make an informed decision which is caused by contingent pricing. This conclusion should even hold true for vulnerable consumers. Mere contingent pricing does not materially distort their decisions in violation of the UCP rules.

It is important to distinguish between contingent pricing and the combination of contingent pricing with information describing the reasons and conditions of the offer. The latter practice could actually influence and alter the consumer's transactional choice, constituting an unfair commercial practice. A further distinction is necessary, between simple cross-selling and suggestive, misleading or aggressive practices prohibited under the UCP rules.<sup>141</sup> In *Orange Polska*, the CJEU clarified the notion of

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<sup>138</sup> In practice, companies will combine these observations with other data, such as browsing history and social media data.

<sup>139</sup> Opinion of A-G Campos Sánchez-Bordona, 30 January 2019, Case C-628/17 (*Orange Polska*), para. 57 et seq.

<sup>140</sup> Comparison websites, operated by commercial entities or consumer organisations, exist in a variety of product markets and facilitate the information gathering and evaluation.

<sup>141</sup> An example of a communication of simple cross-selling is 'Your price equals X because of your purchase of product Y'. See in a similar vein, European Commission (n 113), par. 5.2.13.

an aggressive commercial practice, namely undue influence.<sup>142</sup> The Court concluded that conduct aimed at limiting the consumer's freedom of choice, that has the effect of putting pressure on the consumer such that his or her freedom of choice is significantly impaired, could qualify as a similar practice.<sup>143</sup> While the case did not involve a transaction entirely conducted online, it shows that accompanying information and actions may cause an otherwise acceptable offer to become unfair. For example, contingent pricing could become unfair if the company uses payment data to select vulnerable consumers and proactively targets those consumers with high-priced product offers by means of price alerts, e.g. via email or app notifications. A vulnerable consumer who predominantly decides with his or her intuitive cognitive system, may decide to purchase the high-priced product. Targeting contingent pricing to vulnerable groups is not *per se* unfair, but given the company's awareness of the consumers' circumstances, combining the personalized prices with communications designed to exploit said vulnerability – thereby impacting the consumers' perception of the prices – is more likely to be considered an unfair commercial practice.<sup>144</sup> If judges would adopt a similar distinction, that would be beneficial.

In conclusion, contingent pricing is neither at odds with the principle of consumer autonomy nor unfair *per se*, but may in certain circumstances form part of unfair commercial practices.<sup>145</sup> The exact circumstances are not clearly discernible. The traits and characteristics of the 'average consumer' and the impact of particular vulnerabilities on the average consumer standard are ill-defined and subject of academic debate, in particular due to the abovementioned insights into consumer behavior.<sup>146</sup> Therefore, there is benefit to be gained from empirical research to present a more precise account of consumer decision-making in response to contingent pricing.<sup>147</sup> At the same time, while increased protection may be beneficial to some consumers, it must be remembered that the rules should incentivize consumers to carefully consider the available information prior to consenting to the processing of personal data and purchasing products. Adopting a general postulate of limited rationality could limit the effectiveness of those incentives and would be in discordance with policies aimed

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<sup>142</sup> A-G Campos Sánchez-Bordona (n 139), para. 46 et seq.

<sup>143</sup> The CJEU provided as an example the announcement that any delay in signing the contract would mean that subsequent conclusion thereof would be possible only under less favourable conditions.

<sup>144</sup> One could argue that specific misfortune or particular vulnerability impairs the consumers ability to make informed decisions, and that the company's solicitations are a form of applying pressure, amounting to undue influence. Article L. 121-2(8) LCC. See also Jan Trzaskowski (n 77).

<sup>145</sup> European Commission (n 113).

<sup>146</sup> Section 3 above.

<sup>147</sup> See similarly, Organisation for Economic Co-Operation and Development, *Challenges to Consumer Policy in the Digital Age, Background Report, G20 International Conference on Consumer Policy* (2019), 32 et seq and 66; Alan Schwartz, *Regulating for Rationality* 67 *Stanford Law Review* 1373 (2015); UK Competition and Market Authority, *Consumer Vulnerability: Challenges and Potential Solutions* (2019), paras 85-88.

to promote consumer awareness and consumer empowerment.<sup>148</sup> Therefore, the evaluation of contingent pricing under the UCP rules should therefore assume the rationality and autonomy of the average consumer, unless further context-specific yields objective empirical evidence to the contrary.

### 5.3. *Interpersonal Price Differences*

The anti-discrimination and fairness principles may limit absolute and relative interpersonal price differences.

As set out above, payment data can correlate with protected personal characteristics. Therefore, without mitigation, personalized pricing algorithms may particularly disadvantage segments of consumers sharing the relevant protected characteristic.<sup>149</sup> The algorithms may set prices on the basis of their spending patterns, for example by raising the price if a certain (type of) payee appears in their transaction records, but not in the records of other consumers. In other words, consumers with the protected characteristic may face higher prices which, in the extreme, could be high enough to effectively bar access to the product. Leaving practical procedural issues aside, it is unclear if and to what extent the indirect discrimination could be objectively justified following the assessment of the specific circumstances. While the pursuit of profit maximization could be a legitimate purpose, the question is whether the discrimination would be considered *appropriate and necessary*, when balancing the freedom to conduct a business against the right to non-discrimination.<sup>150</sup> In this analysis, the difference between the average price offered to consumers in the segment(s) with the protected characteristic and the average price offered in the segment(s) without the protected characteristic (the 'premium'), will play an important role, as well as the consumer's switching costs, the degree of competition and the social benefits of personalized pricing.

The foregoing means that the premium is limited by the anti-discrimination rules, at least in theory. In other words, by way of example, the price offered to persons whose payment data reveal membership of a particular religious organization (e.g. by donations) should neither include a premium *because* of this characteristic, nor include a premium that cannot be justified as being appropriate and necessary. In practice, the relevance of the anti-discrimination rules may be underwhelming. First, ascertaining discrimination is difficult and monitoring may be a costly exercise.<sup>151</sup> The analysis requires the registration of pricing decisions and the application of advanced statistical methods. Second, profiles based on payment data may be ultimately princi-

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<sup>148</sup> The promotion of consumer awareness is one the tasks of national data protection authorities, see Article 57(1)(b) GDPR. The empowerment logic also applies to the vulnerable consumer. See e.g. Organisation for Economic Co-Operation and Development (n 147), 35-37.

<sup>149</sup> Anya Prince and Daniel Schwarcz, *Proxy Discrimination in the Age of Artificial Intelligence and Big Data* 105 Iowa Law Review 1257.

<sup>150</sup> Frederik Zuiderveen Borgesius (n 107).

<sup>151</sup> Kleinberg et al (n 35).



pally oriented around behaviours and preferences which may be shared by segments with and without a particular protected characteristic. In that case, the conduct of the company is outside the scope of anti-discrimination rules, since consumers with the protected characteristic are not particularly disadvantaged.

Furthermore, the premium paid by the individual consumer as a consequence of personalization using payment data could also be limited by the requirement of Article 5(1)(a) GDPR that the processing of personal data should be fair.<sup>152</sup> Profiling – and consequently, personalized pricing – can be unfair.<sup>153</sup> The principle of fairness should however, be critically assessed in conjunction with the purpose of processing. In particular, if the consumer explicitly consents to the processing of personal data for the purpose of discriminatory treatment, *c.g.* payment data for personalized pricing, such discriminatory treatment cannot be considered unfair *per se*. Fairness includes, *inter alia*, recognizing the consumer's reasonable expectations, considering the possible adverse consequences processing may have on the consumer, and having regard to the relationship and potential effects of imbalance between the consumer and the company.<sup>154</sup> These values are important in the fairness assessment. A consumer who consents to the processing of payment data and personalized pricing can reasonably expect to be offered a price that differs from the uniform price. The consumer's reasonable expectations as to the direction (i.e. a premium versus a discount) and the amount of the difference are more ambiguous, even in light of the company's disclosure. Moreover, it remains to be seen how expectations should be balanced against possible adverse consequences and how the balance of power in the relationship impacts the assessment.<sup>155</sup>

#### 5.4. Price-value Differences in Case of Dominance

As discussed above, it can be argued that personalized prices can be limited on the ground that they are 'excessive', in violation of Article 102 TFEU and Article 5 NCL. Companies may use payment data to personalize prices by raising them to the estimated WTP, per consumer or by consumer segment. The dominant firm which engages in this behaviour could in theory face enforcement actions under these rules. At the same time, at least three variables complicate a clear analysis of the ques-

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<sup>152</sup> Recital 60 and Article 5(1)(a) GDPR.

<sup>153</sup> Article 29 Working Party (n 93), section III.A.1. Note that it is not specified which factors lead to the unfairness of profiling and that it is unclear to which extent the guidance can be generalized, since the examples pertain to specific sectors (credit, insurance and employment).

<sup>154</sup> Recital 60 GDPR. European Data Protection Board, *Guidelines 2/2019 on the Processing of Personal Data under Article 6(1)(b) GDPR in the Context of the Provision of Online Services to Data Subjects*, Version 2.0, 8 October 2019, section 2.1.

<sup>155</sup> As explained above, the assumption that payment data comprehensively represents the consumer's financial situation is not always tenable. People may use multiple bank accounts and may have multiple sources of income which are not all shared with the payment service provider or even received in bank accounts. This reality complicates the assessment.

tion to which extent the doctrine could and would be invoked to limit personalized pricing.

One variable is the nature of the doctrine. The approach taken to establish a finding of excessive pricing is effects-based, meaning that in each case it should be ascertained whether the overall welfare effects of the practice are anti-competitive and not counter-balanced by efficiencies. For example, it may be the case that a group of consumers who are classified as wealthy consumers on the basis of their payment data pay significantly higher prices and more consumers have access to the product at significantly lower prices due to the output expansion effect, such that the average price charged to all consumers remains the same. In that case, it is unlikely that the overall prices will be considered excessive and welfare-reducing.<sup>156</sup>

A second variable pertains to the methodology used to assess the fairness of the price. The computation of the economic value of the product is plagued by vague and conflicting valuation methods and benchmarks.<sup>157</sup> As a consequence, the objective assessment of the economic value of the product to the consumer lacks a solid conceptual basis, which in turn obstructs a clear and unequivocal assessment of price fairness. In order to use the doctrine to limit prices across consumer markets, objective valuation methods and benchmarks which could be used by competition authorities and sellers should therefore be designed and tested in court.

A third variable is policy. In general, competition authorities and courts in the European Union consider that prices fulfil an important role for the functioning of competitive markets. For example, they provide incentives for new entrants to enter into a market and reap the rewards of their investments. For this reason, instead of price regulation, they may resort to other policy instruments to restore competition in markets with personalized pricing, instead of price regulation. However, in recent years competition authorities in Member States have intervened in markets for certain pharmaceutical products on the basis of the doctrine.<sup>158</sup> Outside of the European Union, authorities have intervened using similar regimes.<sup>159</sup> It remains thus to be seen how competition law policy will develop in this regard.

From a systemic point of view, the broader question is whether competition law is the most appropriate instrument to limit excessively high personalized prices. The use of payment data requires the explicit and informed consent of consumers under the PSL and the GDPR. Without such consent, companies are not permitted to engage in personalized pricing using payment data. In line with the information paradigm and the policy objectives of consumer awareness and empowerment, those regimes are first-order instruments to address the issue.<sup>160</sup> Only in markets where due to sufficient lack of competition consumer choice is limited to such extent that the informa-

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<sup>156</sup> Organisation for Economic Co-Operation and Development (n 5), 26-32.

<sup>157</sup> See more generally, Michal Gal, *The Case for Limiting Private Litigation of Excessive Pricing* 15 *Journal of Competition Law and Economics* 298.

<sup>158</sup> Organisation for Economic Co-Operation and Development, *Excessive Prices in Pharmaceutical Markets, Background Note by the Secretariat* (2018).

<sup>159</sup> See for example, Israel, *Excessive Prices in Pharmaceutical Markets, Note by Israel* (2018).

<sup>160</sup> In a similar vein, Inge Graef (n 137), 555.

tion paradigm is no longer tenable or payment data has been unlawfully acquired and used, would there be room for application of the excessive pricing doctrine.

In conclusion, the excessive pricing doctrine could limit personalized prices, but it should be considered as a second-order instrument, which should only be applied if the pricing practices cannot be addressed by other rules.

## 6. Final Thoughts

The aim of this article is to assess the legality and limits of personalized pricing under European Union and Luxembourg law. The conclusion is that the practice is in principle permitted under the current laws and regulations, but that in specific circumstances the extent of personalization may be limited by the rules. Regulators and judges must assess all the elements of the factual matrix and in some cases need to strike a delicate balance between the interests of companies engaging in personalized pricing and the interests of consumers. Finding an optimal balance requires more than general economic assumptions. The legal analysis of personalized pricing is inextricably linked with the empirical economic analysis of the practice. Therefore, regulatory and judicial assessments should be data-driven and context-specific. By way of example, a number of circumstances have been analyzed in an exploratory fashion. Further analysis and research is necessary to understand the market dynamics and welfare effects and of this nascent practice as its adoption gains pace and more consumers become aware of the practice.

The findings of those investigative efforts and maturation of the practice should also determine whether more specific regulation is necessary and can be formulated. As a matter of principle, regulation should only be formulated if there is a market failure which can be addressed by means of the adoption and enforcement of legal rules. In general, but especially in the case of e-commerce, it is important to adopt a holistic approach to the mitigation of issues which may present themselves in time. The law is only one of several vectors impacting the behavior of economic agents in online markets. The other vectors are social norms, markets and architecture and ideally, the vectors should collectively produce the best result.<sup>161</sup> One can expect the three other vectors to evolve over time. As consumer awareness and public understanding of personalized pricing grow, the social norms regarding personalized pricing will further crystallize. At the same time, companies may develop software applications solutions for consumers to make informed privacy and purchasing choices, impacting consumers' responses to the practice. Finally, the modalities of personalized pricing depend on the development of internet architecture. New hardware and software will likely impact the payments ecosystem over time, which will in turn determine how consumers receive offers and pay for products. Regulatory choices should take those vectors into consideration. If a legal rule should be adopted,

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<sup>161</sup> See Lawrence Lessig, *The Laws of Cyberspace*, <[https://cyber.harvard.edu/works/lessig/laws\\_cyberspace.pdf](https://cyber.harvard.edu/works/lessig/laws_cyberspace.pdf)> (accessed 8 August 2019).

the policy maker should consider which type of rule is best suited to address the market failure. For some interventions, descriptive rules are preferred over prescriptive rules while for other interventions, mandatory rules are the only solution<sup>162</sup>. It would be good if policy makers, in the construction of the appropriate legal rule and the assessment of its impact on the relevant market, also adopt a data-driven approach.

### **Annex: Personalized Pricing in Practice**

Personalized pricing essentially involves three key operations.<sup>163</sup>

#### *Step 1 – The Collection and Storage of Personal Data*

- I. Generally, companies collect data directly from the consumer (active collection) and through devices (passive collection).<sup>164</sup> The bulk of the data on the consumer is collected through an expanding list of internet-connected consumer devices: smart speakers, connected cars, smartphones, cameras, watches and dolls are just a few.<sup>165</sup> This may constitute raw device usage data, or data collected through interactions with software applications, such as an internet browser (website browsing history), a virtual assistant (voice recordings), a website (html code) or social media apps (networks of connections, ‘likes’). Payment data is either directly retrieved from the server of the account servicing payment service provider through an API, or an entity which grants access to the data on behalf of the ASPSP.<sup>166</sup>

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<sup>162</sup> See for a typology of rules Frederick Schauer, *Playing By the Rules – A Philosophical Examination of Rule Based Decision-Making in Law and in Life*, 1-16 (New York: Oxford University Press 1991).

<sup>163</sup> The steps have been extremely simplified and provided solely for illustration purposes. It is based on the author’s interpretation of a variety of sources including Organisation for Economic Co-operation and Development (n 5) and UK Payment Systems Regulator (n 26), 48-49.

<sup>164</sup> Applications have access to files stored on the devices, as well as device information (such as states and user actions). Browsers, besides saving the history of visited sites, store cookies on the device, provide information on the device and the user (e.g. is it a Mac, language operating system) and even interact with downloaded code designed to collect and transfer information on user actions (e.g. Facebook Pixel). Organisation for Economic Co-Operation and Development (n 5), 10-11. Consumer profiling essentially involves the extraction of information from consumer data in order to classify the consumer in socioeconomic, psychographic or other groups and to construct a model to predict the consumer’s behaviours, c.q. the propensity to purchase the product at the offered price.

<sup>165</sup> Sandra Wachter and Brent Mittelstadt (n 128). In practice, the consumer’s profile is constructed by using processing the data with machine learning algorithms, in order to find relationships between the various data points (the model’s variables or features). In order to use the algorithms, they are trained on a training data set. The choice of training data and the model specifications are determinative for the algorithms’ performance.

<sup>166</sup> See for a Luxembourg example, Luxhub S.A. (CSSF license nr: I00000129). Kleinberg et al (n 33); Hermann Simon and Martin Fassnacht, *Price Management - Strategy, Analysis, Decision, Implementation*, 342 et seq (Cham: Springer Nature Switzerland AG 2019).

- II. Through the creation of unique identities or usage of certain variables (e.g. email address), the data can be collected, aggregated and combined across various devices and software applications used by the same consumer.<sup>167</sup>
- III. The data is collected by companies whose business models depend on data collection, such as advertising (data aggregators).<sup>168</sup> Companies can collect and store their own data or enter into data-sharing agreements, but they regularly access data analytics platforms of data aggregators, upon the customer's consent to the terms and conditions.<sup>169</sup>

### *Step 2 – Profiling of the (Potential) Customer*

- IV. Consumer profiling essentially involves the extraction of information from consumer data in order to classify the consumer in geographic, demographic, psychographic, behavioral, financial or other groups and to construct a model to predict the consumer's behaviours, c.q. the propensity to purchase the product at the offered price.
- V. In practice, the consumer's profile is constructed by processing the data with machine learning algorithms, in order to find relationships between the various data points (the model's variables or features).<sup>170</sup> The algorithms, are trained on a training data set. The choice of training data and the model specifications are determinative for the algorithms' performance.
- VI. The profiles may have colourful names such as "MAML" (middle aged man in Lycra), "World-Class Wealth", "Dependable Me", "Local Focus", "Urban Scramble", "Truckin' & Stylin", "Thrifty Elders" and "Allergy Sufferer".<sup>171</sup>
- VII. There are various ways to use payment data for profiling purposes. To give some examples, companies may use the data to classify each consumer using recency-frequency-monetary value (RFM) analysis in respect of specific products, to identify key life events or classify consumers using general characteristics of their sources of income and expenditures in a broader framework. Payment data contain granular, verified information on the person's sources of

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<sup>167</sup> See for example, Facebook Pixel and Facebook Analytics <<https://analytics.facebook.com/>>. See for a description of the WTP and the CLV, Andrew Smith, *Consumer Behaviour and Analytics*, 32 et seq (New York: Routledge 2020); Winer (n 7), 195.

<sup>168</sup> Ariel Ezrachi and Maurice Stucke, *The Dream of Ultimate Personalization (and the Disturbing Reality of Behavioural Discrimination)* 4 *Concurrences* 28 (2017) at 30; United States Federal Trade Commission, *Data Brokers: A Call for Transparency and Accountability* <<https://www.ftc.gov/reports/data-brokers-call-transparency-accountability-report-federal-trade-commission-may-2014>> (accessed 8 August 2019).

<sup>169</sup> See Facebook Analytics (n 167). Alternatively, they may collect the data through a group company or a data broker.

<sup>170</sup> Kleinberg et al (n 33); Hermann Simon and Martin Fassnacht, *Price Management – Strategy, Analysis, Decision, Implementation*, 342 et seq (Cham: Springer Nature Switzerland AG 2019).

<sup>171</sup> Federal Trade Commission (n 168); Experian Ltd, *UK Mosaic Brochure*, <<https://www.experian.co.uk/business/marketing/segmentation-targeting/mosaic/>> (accessed 8 August 2019).

income, financial assets, purchase history and other information, such as place of employment, personal relations and political affiliations.<sup>172</sup> Payment data only shows the total amount of transactions, omitting product-level data, but data aggregators partnering with companies are technically capable of linking purchase data collected from the company's website with payment data.

- VIII. On the basis of the extracted information, a number of key variables are computed or estimated, including price sensitivities, switching costs, WTP and consumer lifetime value (CLV)<sup>173</sup>. The WTP represents the utility or value of the product based on the benefits of its features to the consumer and therefore linked to the consumer's personal characteristics. It is expressed in monetary terms, generally modelled as a discrete choice model and estimated using revealed preferences (choices made) or stated preferences (responses to questions). The CLV is the present value of the sum of the predicted cash flows from economic exchanges between the consumer and the company during the life of the consumer. Whether it makes sense to set the price equal to the consumer's WTP depends on the company's approach in respect of the consumer. In a market or segment characterized by low consumer loyalty, the company may want to price at WTP, as it does not expect the consumer to return. However, if the company is 'poaching' the consumer or seeks to convince the consumer to engage in multiple exchanges to receive as much of the CLV as possible, the company may set the price below WTP.
- IX It is useful to mention that all steps (from collection to pricing) are generally fully automated. The transfer of data can take place using APIs and the pricing is generally implemented using algorithms. For this reason, it is more correct to refer to 'algorithmic personalized pricing'.

### *Step 3 – Setting the Price*

- X. Companies use the consumer's profile and the variables pricing algorithms to set the price for a product in a particular exchange. These pricing algorithms can be simple automated business rules (IF/THEN) or can be machine-learning algorithms that set prices by learning from the consumers' responses and incorporating market information from competitors.
- XI. Finally, companies can implement price discrimination using various modalities, such as (1) a special list price for each consumer, (2) a general list price combined with personalized coupons, (3) a personalized price as a result from an interactive price -setting process (e.g. an auction), (4) providing different versions of the same product (versioning) without additional cost to the company, (5) providing a single price for an exchange involving multiple products (through tying or bundling, within the limits of competition law).

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<sup>172</sup> Bureau Européen des Unions de Consommateurs AISBL, *Consumer-friendly Open Banking: Access to Consumers' Financial Data by Third Parties* (BEUC-X-2018-082, 20 September 2018), 5.

<sup>173</sup> This paragraph is based on Andrew Smith, *Consumer Behaviour and Analytics*, 32 et seq (New York: Routledge 2020); Winer (n 7), 195; Simon and Fassnacht (n 170), chapter 3.