
Articles

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The Calculus of Data Disclosure and Price Acceptance

I. Introduction

Personalized pricing (PP) has found its way into positive European Union (EU) consumer law. Directive (EU) 2019/2161 on Better Enforcement and Modernisation of Consumer Law (BEMD) introduces a disclosure obligation in Directive 2011/83/EU on Consumer Rights (CRD), requiring sellers to inform consumers that the offered price has been personalized.¹ Recital 45 BEMD clarifies that since sellers can personalize prices based on automated decision-making and profiling, consumers should be informed of the price personalisation, so that they can take the associated risks into account in their purchasing decisions. How consumers should assess these risks, is not further explained.

The purpose of this article is to analyse how EU consumer law expects consumers to make purchasing decisions in case of PP, a topic that has ties to various bodies of literature. First, the article contributes to a growing legal and economic literature on the effects of personalized pricing on consumer welfare.² The article also connects to the literature on normative models of consumer behaviour, *i.e.* ‘consumer paradigms’ and in particular the discussion on the validity of the information paradigm in light of findings of behavioural economics.³ The article also explores the ‘privacy calculus’ of internet users, meaning decisions to disclose personal information.⁴ The literature on the economic consequences for consumers of mass data collection by large data-monetising companies, is also relevant.⁵ Finally, the article contributes to the voluminous literature on the merits of disclosure as an instrument of consumer protection.⁶

The scope of this article is limited to the analysis of ‘e-commerce transactions’, meaning electronic transactions in which the price setting process is completely conducted via the internet or other computer-mediated (online communication) networks.⁷ Issues regarding choice architecture, price presentation and marketing are beyond its scope. Furthermore, the discussion only covers markets for goods and services (products) that are not subject to sector-specific regulation (*e.g.* telecommunications, credit, electricity). Regulated markets have particularities that are beyond the present discussion. The question whether any policy interventions should be adopted by the European Union or the Member States, will also not be addressed.

II. Defining Personalized Pricing

Before discussing the regulatory framework, it is necessary to delineate the notion of PP and, more precisely, the type of PP that this article focusses on.

1. Posted Prices

In general, sellers can deploy a variety of price setting strategies. The three main strategies are bargaining, auctions and posted prices.⁸ In theory, sellers can personalize prices as part of each of those strategies. This analysis is only concerned

with posted prices, *i.e.* the practice whereby the seller posts a price prior to the sale and the consumer can only accept or reject this posted price.⁹

2. Value-Based Pricing

Sellers must choose an approach to pricing. Sellers can set prices on the basis of (1) their marginal costs of production and a profit margin (cost-based pricing), (2) the prices of products set by their competitors (competition-based pricing), and/or (3) the consumers’ estimated willingness-to-pay (WTP) (value-based pricing)¹⁰. The WTP, also called the reservation price, is the highest price the consumer is willing to pay for a particular product offered by a particular seller.¹¹ Personalized pricing is a form of value-based pricing, whereby the seller sets the price equal to the WTP with the purpose to maximize profit or revenue.¹² It should be noted that even if the seller aims to set prices equal to the consumers’ WTPs, in reality this approach is often not commercially feasible. In most non-monopolistic markets, sellers have limited pricing power as they are restricted by competitive dynamics and other factors.¹³

3. Price Discrimination

Sellers can combine value-based pricing with price discrimination. They can decide to charge every consumer the same price for each unit of the product (uniform pricing) or charge different consumers different prices for the same product manufactured at the same marginal costs of production (price

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1 Article 4(4)(a)(ii) Directive (EU) 2019/2161 of 27 November 2019 as regards the better enforcement and modernisation of Union consumer protection rules [2019] OJ L328/7 (Better Enforcement and Modernisation Directive). Member States must transpose the BEMD by 28 November 2021.

2 Paolo Siciliani, Christine Riefa and Harriet Gamper, *Consumer Theories of Harm – an Economic Approach to Consumer Law, Enforcement and Policy Making* (Hart Publishing 2019).

3 Dorota Leczykiewicz and Stephen Weatherill (eds), *The Images of the Consumer in EU Law, Legislation, Free Movement and Competition Law* (Hart Publishing 2016).

4 Tamara Dinev and Paul Hart, ‘An Extended Privacy Calculus Model for E-Commerce Transactions’ (2006) 17 *Information Systems Research* 61.

5 Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (Public Affairs 2019), chapters 2-10.

6 Oren Bar-Gill & Omri Ben-Shahar, ‘Regulatory Techniques in Consumer Protection: A Critique of European Consumer Contract Law’ (2013) 50 *Common Market Law Review* 109.

7 Eurostat glossary, ‘e-commerce’ (<https://ec.europa.eu/eurostat/statistics-explained>), accessed October 2021.

8 Rakesh Vohra and Lakshman Krishnamurthi, *Principles of Pricing: An Analytical Approach* (Cambridge University Press, 2012) 10.

9 *Ibid.* This strategy is also called the ‘take-it-or-leave-it offer’.

10 Robert Phillips, *Pricing and Revenue Optimization* (2nd ed., Stanford University Press 2021) 24-29.

11 Jeffrey Perloff, *Microeconomics – Theory and applications with calculus* (Pearson 2020) 144; Pascale Chapdelaine, ‘Algorithmic Personalized Pricing’, (2020) 17 *NYU Journal of Law & Business* 1.

12 Phillips (n 10).

13 Phillips (n 10) 27-28.

discrimination).¹⁴ Sellers choosing to apply person-based price discrimination have two options. They can use *perfect price discrimination*, which means charging each individual consumer a different price for each unit of the good or service such that the price charged for the unit is equal to the maximum WTP of that consumer for that unit.¹⁵ Alternatively, they can engage in *group price discrimination*, which involves charging different prices to different consumer groups based on observed shared characteristics, with each group member paying the same amount for each unit of the product.¹⁶ For example, sellers routinely post lower prices for certain consumer groups, such as children, students or seniors.¹⁷ Providing products at lower prices to these segments is often seen as socially beneficial and applying uniform pricing would result in a loss of welfare for these consumers.¹⁸

PP combines value-based pricing and perfect price discrimination. The definition of PP used in this article is ‘any practice of price discriminating final consumers based on their personal characteristics and conduct, resulting in prices being set as an increasing function of consumers’ WTP’¹⁹. In practice, most sellers cannot freely engage in price discrimination. Price discrimination is subject to certain real-world limitations, more specifically imperfect segmentation, cannibalisation and arbitrage, especially in the case of products that are goods.²⁰

4. Data Processing

To implement PP, sellers estimate WTPs by analysing databases with consumer information and purchases applying statistics and machine learning algorithms.²¹ Consumer data points serve as features which are used to construct consumer profiles that combine inferred and observed characteristics.²² Those profiles can be centred on relatively stable demographic or psychographic traits, such as age, financial status, but also health status, religious activities, (re)payment behaviour and gambling.²³ They can also centre around temporary states, such as ‘person likely to suffer from overactive bladder today’.²⁴ By finding correlations between profiled consumers, the products purchased and the monetary value of those purchases, the seller can infer WTPs, preferences and predict purchasing choices at various price points.²⁵ This information is subsequently processed by PP algorithms that set the price in real-time for a specific consumer in a specific transaction. Sellers do not always engage in consumer profiling themselves. As the collection of personal data and profiling requires expertise and resources, sellers often use the services of specialized data intermediaries for these profiling operations.²⁶

5. Price Acceptance

It should be emphasized that by definition, PP (1) is only possible if the consumer consents to disclosure of personal information, and (2) only applies to a transaction if the consumer actually accepts to pay the posted price. Price acceptance by consumers can be modelled using price response functions and predicted with statistical methods.²⁷ Practical experience with these models indicates that price acceptance depends on a number of factors, such as the number of sellers in a market, consumer preferences and prices of product alternatives.²⁸

III. Regulatory Framework Governing Personalized Pricing

The EU regulatory framework applicable to the consumer’s transactional decisions involving PP, spans the areas of data protection and consumer law.²⁹

1. General Data Protection Regulation

PP falls into the material scope of Regulation (EU) 2016/679 on General Data Protection (GDPR). Constructing profiles by processing the personal data of consumers, including online identifiers associated with consumers, can be considered ‘profiling’ in the sense of GDPR.³⁰ GDPR requires the seller, as well as third parties collecting and processing the consumer’s personal data for the purposes of PP on the seller’s behalf, to have explicit consent of the consumer prior to data collection and profiling.³¹ Furthermore, as PP is implemented using algorithms, it is a form of automated individual decision-making and therefore the use of personal data for this purpose also requires explicit consent from the consumer.³²

The consumer’s consent must be informed.³³ To inform the consumer’s consent, the seller must provide the consumer with specific information.³⁴ If directly obtained from the consumer, this information must include *inter alia* the controller’s identity and the purpose of processing, as well as meaningful information about the logic, significance and envisaged consequences of the automated decision-making algorithms.³⁵ Similar information must be provided in case the personal data has not been directly obtained from the con-

14 Perloff (n 11) 412 *et seq*; Phillips (n 10), 120 *et seq*, uses the term ‘price differentiation’.

15 Arthur Pigou, *The Economics of Welfare* (MacMillan and Co 1932) 240 *et seq*; Hal Varian, ‘Price Discrimination’, in Richard Schmalensee and Robert Willig (eds), *Handbook of Industrial Organization – Volume 1* (Elsevier Science Publishers B.V. 1989) 600; Organisation for Economic Co-operation and Development, *Personalised Pricing in the Digital Era – Background Note by the Secretariat* (DAF/COMP(2018) 13, 2018) 9.

16 This form of price discrimination is also known as *third degree price discrimination*, Pigou (n 15); Varian (n 15); OECD (n 15); Robert Phillips, *Pricing and Revenue Optimization* (1st edition, Stanford University Press 2005) 78-89.

17 Philip Kotler and Gary Armstrong, *Principles of Marketing* (15th ed., Pearson Education Limited 2017) 309 *et seq*.

18 Matthew Edwards, ‘Price and Prejudice: The Case Against Consumer Equality in the Information Age’ (2006) 10 *Lewis and Clark Law Review* 559, 586 *et seq*.

19 OECD (n 15).

20 Phillips (n 10) 124.

21 Phillips (n 10) 66-88.

22 See for examples of inferences, Sandra Wachter and Brent Mittelstadt, ‘A Right to Reasonable Inferences: Re-Thinking Data Protection Law in the Age of Big Data and AI’ (2019) 1 *Columbia Business Law Review* 494.

23 See e.g. United States Federal Trade Commission, *Data Brokers: A Call for Transparency and Accountability* (2014) <<https://www.ftc.gov/reports/>> accessed October 2021; Emily Steel, ‘Data brokers change labels describing poor’ *Financial Times* (London, 23 March 2014).

24 Aliya Ram and Madhumita Murgia, ‘Data brokers: regulators try to rein in the ‘privacy deathstars’ *Financial Times* (London, 8 January 2019).

25 Ipsos, London Economics and Deloitte Consortium, *Consumer market study on online market segmentation through personalised pricing/offers in the European Union – Final report* (2018), chapter 3. For example, sellers can aggregate consumers’ data points into scores that proxy for the unobserved WTP, see Alessandro Bonatti and Gonzalo Cisternas, ‘Consumer Scores and Price Discrimination’ (2019) 87 *Review of Economic Studies* 750.

26 See for a treatment of the business models of these intermediaries, Zuboff (n 5).

27 Phillips (n 10), chapters 3 and 4.

28 *Ibid*.

29 As the present focus is on decision-making, the focus is on the main relevant frameworks. Other areas of EU that apply to PP (e.g. competition law, non-discrimination law, disclosures under Directive 2000/31/EC) are beyond the scope of this article.

30 Recital 30 and Article 4 subs (1) and (4) GDPR.

31 Articles 4(1) and 22(2)(c) GDPR.

32 Article 22(2)(c) GDPR; European Union, *Personalised Pricing in the Digital Era – Note by the European Union* (DAF/COMP/WD(2018) 128, 2018).

33 Article 4(11) GDPR.

34 Recital 60 GDPR.

35 Article 13(2)(f) GDPR.

sumer.³⁶ Providing meaningful information does not mean disclosing how the algorithms work line-by-line: the obligation does not require disclosure of trade secrets of the company or its processors (as defined in GDPR).³⁷ Instead, the seller must inform the consumer through real, tangible examples of the type of possible effects, in order to make the consequences meaningful and understandable.³⁸ Ultimately, the consumer must understand the basic logic of the pricing algorithms.³⁹ In case more information is required, the consumer can use his right to access his personal data stored by the controller⁴⁰, whether the data have been obtained from the consumer or from a third party.

GDPR also provides for the rights to object to processing⁴¹, to obtain human intervention and to contest the decision following consent to automated processing, provided the automated processing has significant effect on the consumer's rights.⁴² These rights are likely to only be invoked when the consumer is charged a higher price than the market price; if the price is lower than the market price, the significant affection criterion is likely to not be met.⁴³

2. ePrivacy Directive

The general rules of GDPR are complemented by Directive 2002/58/EC on ePrivacy (ED), a *lex specialis* with rules for specific categories of personal data: terminal data, traffic data and location data. In respect of these data categories, the same 'inform/consent' scheme applies, *i.e.* the seller must obtain the consumer's informed consent prior to processing the data.⁴⁴ Prior to such consent, the seller must inform the consumer on the types of data processed, the purposes of processing and the duration of processing, in accordance with GDPR.⁴⁵ This approach does not change fundamentally in the proposed ePrivacy Regulation.⁴⁶ The draft rules require consumer consent and information disclosure for each data category, in line with GDPR.⁴⁷

3. Consumer Rights Directive

A contract concluded in an e-commerce context in which the seller applies PP, falls in the material scope of CRD. The contract is a 'distance contract' under CRD and one of the objectives of CRD is to harmonise information to consumers and a right to withdrawal in respect of distance contracts.⁴⁸ CRD provides a list of pre-contractual information which the seller should provide to the consumer in a clear and comprehensible manner prior to the consumer being bound by a distance contract or corresponding offer.⁴⁹ The list of items includes the total price and the main product characteristics.⁵⁰ BEMD complements the list with a new item requiring sellers to disclose that the price was personalized on the basis of automated decision-making, where applicable.⁵¹ The term 'price' is not further defined in BEMD or CRD. This omission raises uncertainty as to whether the rule only covers initially personalized posted prices or also posted prices following a personalized discount (*e.g.* a promo code), but given its position in the list, it is reasonable to infer that the disclosure covers initially personalized posted prices. Recital 45 BEMD clarifies that the seller may engage in PP and assess the consumer's purchasing power, using automated decision-making and profiling.⁵² The consumer should be clearly informed when the price is personalized, so that he can 'take into account the potential risks' in his purchasing decision.⁵³

CRD also provides a right of withdrawal for distance contracts. Specifically, save for a limited number of exceptions, the consumer has a period of 14 days to withdraw from a

distance contract, without giving any reason.⁵⁴ The information obligations and right of withdrawal in the CRD can be considered as important safeguards of rational choice, as they allow the consumer to have the necessary information as well as a prolonged time to (re)consider the purchasing decision.⁵⁵ CRD does not apply to contracts with consumers in all market sectors, but for those contracts excluded from its scope, sector-specific PP-related information obligations or rights of withdrawal may exist.⁵⁶

4. Unfair Commercial Practices Directive

The consumer's purchasing decision may be influenced by the seller's actions. Directive 2005/29/EC on Unfair Commercial Practices (UCPD) was specifically designed to protect consumers' transactional decisions from certain influence by sellers, in particular from unfair commercial practices.⁵⁷ Unfair commercial practices are practices that materially distort or are likely to materially distort the economic behaviour with regard to the product of the average consumer whom it reaches or to whom it is addressed, and are contrary to the requirements of professional diligence.⁵⁸ The relevant benchmark to evaluate the seller's practice(s) is the average member of the consumer group reached or addressed by the practice.⁵⁹ Examples of those practices are misleading actions and misleading omissions, which – simply put – involve the provision or omission of certain information causing or likely to cause the consumer to take a transactional decision that he

36 Article 14 GDPR, in particular sub (2)(g).

37 Recital 63 GDPR; Article 29 Working Party, *Guidelines on Automated individual decision-making and Profiling for the purposes of Regulation 2016/679* (WP251rev.01, 2018) 17; Maja Brkan and Grégory Bonnet, 'Legal and Technical Feasibility of the GDPRs Quest for Explanation of Algorithmic Decisions: of Black Boxes, White Boxes and Fata Morgana' (2020) 1 *European Journal for Risk Regulation* 18.

38 Article 14(2)(g) GDPR; Article 29 Working Party Guidelines (n 38), 26; Recital 58 GDPR.

39 Laura Drechsler and Juan Carlos Benito Sánchez, 'The Price Is (Not) Right: Data Protection and Discrimination in the Age of Pricing Algorithms' (2018) 9 *European Journal of Law and Technology* <<https://ejlt.org>> accessed October 2021.

40 Article 15(1)(h) GDPR.

41 Article 21(1) GDPR.

42 Article 22 subs (2) and (3) GDPR.

43 Article 21(1) GDPR. Similarly, Richard Steppe, 'Online price discrimination and personal data: A General Data Protection Regulation perspective' (2017) 33 *Computer Law and Security Review* 768. See section V. for more details.

44 Articles 2(f), 5(3) and 6(3) ED.

45 Article 5(3), 6(4) and 9(1) ED.

46 European Commission, 'Proposal for a Regulation of the European Parliament and of the Council concerning the respect for private life and the protection of personal data in electronic communications and repealing Directive 2002/58/EC' COM/2017/010 final (version: ST 6087 2021 INIT) (ePrivacy Regulation).

47 Articles 6 a(1)(a), 6 b(c), 8(1)(b) and 8(2)(b) ePrivacy Regulation.

48 Recital 5 CRD and Article 2(7) CRD.

49 Article 6(1) CRD.

50 Article 6(1) subs (a) and (e) CRD.

51 Article 6(1)(ea) CRD.

52 While purchasing power and willingness-to-pay are different concepts, the distinction is trivial in this context.

53 Recital 45 BEMD.

54 Article 9(1) CRD.

55 Christian Twigg-Flesner, Reiner Schulze and Jonathon Watson, 'Protecting rational choice: information and the right of withdrawal', in Geraint Howells, Iain Ramsay and Thomas Wilhelmsson (eds), *Handbook of Research on International Consumer Law* (2nd edition, Edward Elgar Publishing 2018) 111 *et seq.*

56 Articles 3(3)(d) and 2(12) CRD. See for example, European Commission, 'Proposal for a Directive of the European Parliament and of the Council on consumer credits' COM/2021/347 final (CCD Proposal), which includes a similar disclosure obligation in Article 13 as well as a right of withdrawal.

57 Recitals 6 and 7 UCPD.

58 Article 5(2) UCPD.

59 *Ibid.*

would not have taken otherwise.⁶⁰ A seller cannot provide information regarding the manner in which the price is calculated that amounts to a misleading commercial practice.⁶¹ Communications regarding PP must apply with this negative obligation. Note that PP is not an unfair commercial practice in itself; UCPD allows the practice as long as consumers are adequately informed.⁶²

5. Unfair Contract Terms Directive

An accepted price offer becomes a contractual price term, which falls in the material scope of Directive 93/13/EEC on Unfair Contract Terms (UCTD). UCTD contains a disclosure standard that may subject the personalized price to the review of the courts. UCTD provides that a contractual term which has not been individually negotiated shall be regarded as unfair if, contrary to the requirement of good faith, it causes a significant imbalance in the parties' rights and obligations arising under the contract, to the detriment of the consumer.⁶³ Price terms are in principle subject to the unfairness assessment.⁶⁴ However, UCTD provides that the assessment of the unfair nature of the terms relates neither to the definition of the main subject matter of the contract nor to the adequacy of the price as against the services or goods supplied in exchange, in so far as these terms are in plain intelligible language (*i.e.* grammatically and substantially transparent).⁶⁵ The relation between the personalized price and the economic value of the product is thus *a priori* excluded from review. The reasons for this exclusion are (1) safeguarding the primacy of contractual freedom and the determination of prices by market forces, (2) rejecting the *iustum pretium* doctrine and (3) acknowledging the absence of an objective legal criterion to guide the assessment.⁶⁶ However, if the contractual language does not meet the transparency standard, the judge can assess the adequacy of the price terms. Member States can deviate from UCTD by extending the unfairness assessment to price adequacy in their national systems.⁶⁷

IV. Decision Calculus

The regulatory framework, as concisely outlined above, establishes informed consent and information disclosure as preconditions for the application of PP by the seller. The consumer, in turn, must take two separate decisions prior to being bound by a personalized price: the decision to (1) disclose personal information to the seller (privacy decision), and (2) accept to pay the price charged by the seller for the product (purchasing decision).⁶⁸ The transactional decision can therefore be considered as a *composite decision*, where the purchasing decision is the primary decision and the privacy decision is the ancillary decision.⁶⁹ This section first investigates how consumers *actually* make these decisions, followed by an analysis of how EU consumer law *expects* consumers to make these decisions.

1. Literature

There are diverging views on how consumers make privacy decisions. *Privacy calculus theory* (PCT) posits that privacy decisions can be construed as the result of a mental calculus that weighs the expected benefits of disclosures of personal data against their costs⁷⁰. If the perceived expected benefits of disclosure outweigh the perceived costs of disclosure (privacy risks and concerns), the consumer is willing to provide personal information.⁷¹ PCT is thus a variant of rational choice theory, a school of thought based on the assumption that individuals choose a course of action that maximises subjective utility.⁷²

As other rational choice theories, PCT assumes that consumers possess the cognitive resources, information, attention and willingness to actively engage in the decision-making process. Qualitative research suggests that this assumption may not always hold, meaning that consumers' privacy decisions may not necessarily be the result of a cost-benefit consideration.⁷³ One strand of the literature, using insights from behavioural economics, relaxes the rationality assumption. The general tenet of this literature is that consumers' decision-making processes involve heuristics, under- and overestimation of risks, habits and other elements that lead to deviations from the process and predictions of PCT.⁷⁴ Another strand of the literature largely discards the rationality assumption. Specifically, some authors posit that internet users disclose personal information in the face of *privacy fatigue*, which means that they experience a sense of weariness toward privacy issues coupled with the belief that there is no effective means of managing personal information on the Internet.⁷⁵ Other authors state that *privacy apathy* and *privacy cynicism*, which are related experiences that have in

60 Article 5(4) UCPD.

61 Article 6(1)(d) UCPD.

62 Commission Staff Working Document, 'Guidance on the implementation/application of Directive 2005/29/EC on unfair commercial practices' SWD(2016) 163 final, par 5.2.13; Inge Graef, 'Algorithms and fairness: What role for competition law in targeting price discrimination towards end consumers' (2018) 24 Columbia Journal of European Law 541.

63 Article 3(1) UCTD.

64 Case C-472/10 *Invitel* [2012] ECLI:EU:C:2012:242, para 23.

65 Article 4(2) UCTD; Case C-26/13 *Kásler and Káslerné Rábai* [2014] ECLI:EU:C:2014:282, paras 71 and 72.

66 Council's reasons for adoption of Council Directive 92/EEC of 22 September 1992 on Unfair Terms in Consumer Contracts (Common Position), JCP; Hans Erich Brandner and Peter Ulmer, 'The Community Directive on Unfair Terms in Consumer Contracts: Some Critical Remarks on the Proposal Submitted by the EC Commission' (1991) 28 Common Market Law Review 647, 656; Ewoud Hondius, 'Unfair Contract Terms and the Consumer: ECJ Case Law, Foreign Literature, and Their Impact on Dutch Law' (2016) 24 European Review of Private Law 457, 496; Case C-84/19 *Profi Credit Polska* [2020] ECLI:EU:C:2020:631, para 79.

67 Article 8 a(1) UCTD. Sweden, Slovenia, Finland, Portugal, Malta and Spain have specifically included price adequacy in the assessment. These countries, as well as Czech Republic, France, Italy, Luxembourg and Austria have extended the assessment to individually negotiated terms <www.ec.europa.eu> accessed July 2021.

68 Note however, that some consumers may not consciously make the privacy decision, Autoriteit Persoonsgegevens, *Toezichtkader Autoriteit Persoonsgegevens – Uitgangspunten voor toezicht 2018-2019* (2018) <https://autoriteitpersoonsgegevens.nl/> accessed July 2021; UK Department for Business, Energy & Industrial Strategy, *Modernising Consumer Markets – Consumer Green Paper* (2018).

69 European Union Agency for Cybersecurity (ENISA), *Study on monetising privacy – An economic model for pricing personal information* (2012) <https://www.enisa.europa.eu/publications/monetising-privacy> accessed October 2021, 8-9.

70 Idris Adjerid, Eyal Peer and Alessandro Acquisti, 'Beyond the Privacy Paradox: Objective versus Relative Risk in Privacy Decision Making' (2018) 42 MIS Quarterly 465; Dinev and Hart (n 4).

71 Dinev and Hart (n 4).

72 Dinev and Hart (n 4); Paul Weirich, 'Economic rationality', in: Alfred Mele and Piers Rawling, *The Oxford Handbook of Rationality*, Oxford (Oxford University Press, 2004). For a gentle introduction, Encyclopaedia Britannica, 'Economic rationality' <https://www.britannica.com> accessed October 2021.

73 The phenomenon that individuals have high privacy concerns yet are willing to disclose personal information easily, is called the 'privacy paradox'. For an overview, Susanne Barth and Menno D. T. de Jong, 'The privacy paradox – Investigating discrepancies between expressed privacy concerns and actual online behaviour – A systematic literature review' (2017) 34 Telematics and Informatics 1038.

74 Barth and de Jong (n 73) section 3.2.

75 Barth and de Jong (n 73); Hanbyul Choi, Jonghwa Park, Yoonhyuk Jung, 'The role of privacy fatigue in online privacy behavior' (2018) 81 Computers in Human Behavior 42; Ruwan Bandara, Mario Fernando, Shahriar Akter, 'Explicating the privacy paradox: A qualitative inquiry of online shopping consumers' (2020) 52 Journal of Retailing and Consumer Services 101947.

common the belief that privacy violations are inevitable, coupled with mistrust and a sense of powerlessness, drive data disclosure by users.⁷⁶ Additional potential drivers of consumer decisions deviating from PCT are a complete lack of information, an all-eclipsing desire to reap the benefits of disclosure⁷⁷ and trust in the seller.⁷⁸

There are also diverging views on purchasing decisions. The dominant model is based on rational choice and originates from economics. Microeconomic theory posits that in a non-monopolistic market, a consumer can choose products from different sellers with different features at different prices, subject to the constraints of his budget.⁷⁹ The consumer has a preference order over this choice set (utility function). He also has a WTP for each product and will only accept the price if it is below this WTP.⁸⁰ A rational consumer chooses the best alternative from this choice set given his preferences (utility maximisation).⁸¹

In reality, consumers may not decide in accordance with this model. For instance, consumers incur 'search costs' as they have to spend time and resources to collect the necessary information, which impacts the elements in their choice sets.⁸² Furthermore, empirical insights from behavioural economics suggest that consumers may use alternative decision-making processes. Again, these processes include heuristics, satisficing, loss aversion, mental accounting, subjective discounting and learning by conditioning (e.g. habit formation), which may be affected by cognitive biases.⁸³ In addition, research findings from marketing studies suggest that the degree of involvement also impacts the decision-making process. Consumers generally rely on internal information for low-involvement purchases, whereas for high-involvement purchases, they are more likely to rely on external information sources and to consider more attributes.⁸⁴ Finally, some consumers may simply reject the offer outright once they learn that the seller applies PP, due to their attitude towards PP. Survey evidence suggests that some consumers believe that PP is unfair and do not wish to transact with companies engaged in this practice.⁸⁵

2. Standard in EU Consumer Law

Rational choice theory also underpins EU consumer law. The theory is embodied in the *information paradigm*, a paradigm set out by the European Commission (EC) and followed by the Court of Justice of the European Union (CJEU).⁸⁶ Its foundations can be traced back to the First Consumer Programme, that sets among its priorities (a) the provision of sufficient information enabling the consumer to make 'make a rational choice between competing products and services', and (b) the education of individuals to 'act as discriminating consumers, capable of making an informed choice'.⁸⁷ The importance of the consumer's rights to information and education, as well as organisation, is also underlined by their codification in the Treaty for the Functioning of the European Union (TFEU)⁸⁸, the basis for the EC's actions. Essentially, the paradigm assumes that the consumer, if provided with the necessary information, makes utility-maximizing decisions in line with rational choice theory.⁸⁹ This paradigm is implemented with the notion of the 'average consumer', i.e. a consumer who is 'reasonably well informed and reasonably circumspect and observant'.⁹⁰ The notion is a normative standard that was created by the CJEU to determine what consumers should know and how they are expected to make transactional decisions when faced with information provided by sellers, in cases involving *inter alia* CRD, UCTD and UCPD.⁹¹ Its properties clearly echo the information para-

digm. The average consumer can draw economic consequences from contractual terms for his financial obligations.⁹² In addition, the average consumer presumably knows or has access to certain market information.⁹³ The average consumer can also be considered capable of making basic economic judgments, such as deciding whether a price difference justifies purchasing an item in one shop or other shops, taking into account product features (e.g. size) and geographical proximity.⁹⁴ Finally, the average consumer who has been informed through disclosures has a certain degree of autonomy and responsible for his own actions.⁹⁵

Despite the primacy of the information paradigm, the consumer is not expected to always act rationally. EU consu-

- 76 Christopher Lutz, 'Data capitalism and the user: An exploration of privacy cynicism in Germany' (2020) 22 *new media & society* 1168.
- 77 Barth and de Jong (n 73).
- 78 Earlier research suggests that trust can outweigh privacy concerns, see Dinev and Hart (n 4).
- 79 Martin Kolmar, *Principles of Microeconomics* (Springer International Publishing AG 2017) 158-159; Robert Phillips, *Pricing Credit Products* (Stanford University Press 2018) 213-215.
- 80 Phillips (n 79), 215.
- 81 Kolmar (n 79), 149; Phillips (n 79), 213-215.
- 82 Christopher Townley, Eric Morrison, and Karen Yeung, 'Big Data and Personalized Price Discrimination in EU Competition Law' (2017) 36 *Yearbook of European Law* 683.
- 83 Gerrit Antonides, 'Comparing models of consumer behaviour' in Alan Lewis (ed), *Psychology and Economic Behaviour* (Cambridge University Press 2008) 10.3.
- 84 For a review, see Del Hawkins, David Mothersbaugh and Susan Kleiser, *Consumer behavior: building marketing strategy* (14th edition, McGraw Hill 2020) 515 *et seq.*
- 85 Joost Poort and Frederik Zuiderveen Borgesius, 'Prijdsdiscriminatie, privacy en publieke opinie' (2019) *Ars Aequi* 580; Timothy Richards, Jura Liaukonyte and Nadia Streletska, 'Personalized Pricing and Price Fairness' (2016) 44 *International Journal of Industrial Organization* 138.
- 86 Annette Nordhausen Scholes, 'Behavioral Economics and the Autonomous Consumer', in Catherine Barnard, Markus Gehring and Iyola Solanke (eds), *The Cambridge Yearbook of European Legal Studies – Vol 14, 2011-2012* (Hart Publishing, 2012) 297-324; Vanessa Mak, 'The Consumer in European Regulatory Private Law' in Leczykiewicz and Weatherill (n 3) 381-400.
- 87 Council resolution of 14 April 1975 on a preliminary programme of the European Economic Community for a consumer protection and information policy [1975] OJ C92/1.
- 88 Article 169(1) TFEU.
- 89 Willem van Boom, 'Unfair commercial practices' in Christian Twigg-Flesner (ed) *Research handbook on EU consumer and contract law* (Edward Elgar Publishing 2016) 402-404; Gert Straetmans, 'General Report' in Gert Straetmans (ed), *Information Obligations and Disinformation of Consumers* (Springer Nature Switzerland 2019), 4, 8-25. The GDPR regime could also be subsumed under the information paradigm. Natali Helberger, Orla Lynskey, Hans Micklitz et al, 'EU Consumer Protection 2.0 – Structural asymmetries in digital consumer markets' (research report prepared for BEUC, 2021) 27 *et seq.*
- 90 Cases C-210/96 *Gut Springenheide* [1998] ECLI:EU:C:1998:369, para 37, and C-122/10 *Ving Sverige* [2011] ECLI:EU:C:2011:299, paras 22, 23, 71.
- 91 See e.g. Case C-125/18 *Gómez del Moral Guasch* [2020] ECLI:EU:C:2020:138 (transparency under Article 4(2) UCTD), Case C-266/19 *EIS GmbH* [2020] ECLI:EU:C:2020:384 (disclosure under Article 6(1) CRD) and Case C-632/16 *Dyson* [2018] ECLI:EU:C:2018:599 (misleading omission under Article 7 UCPD). Several authors have commented on its use to calibrate the parameters of consumer protection in specific instances, see e.g. Albertina Albors-Llorens and Alison Jones, 'The Images of the "Consumer" in EU Competition Law', in Leczykiewicz and Weatherill (n 2) chapter 3.
- 92 Case C-776/19 *BNP Paribas Personal Finance* [2021] ECLI:EU:C:2021:470, para 64.
- 93 For example, official references indices published in a National Gazette for the purpose of comparing product options proposed by banks (Opinion A-G Szpunar in Case C-125/18 *Gómez del Moral Guasch* [2019] ECLI:EU:C:2019:695, para 123).
- 94 Opinion A-G Saugmandsgaard Øe, in Case C-562/15 *Carrefour* [2016] ECLI:EU:C:2016:781, para 31.
- 95 Christopher Busch, 'The future of pre-contractual information duties: from behavioural insights to big data', in Twigg-Flesner (n 89) 222-223; Vanessa Mak, 'The Myth of the "Empowered Consumer": Lessons from Financial Literacy Studies' (2012) 1 *Journal of European Consumer and Market Law* 254.

mer law simultaneously conceptualises the consumer as the weaker party in need for protection.⁹⁶ Historically, this protection related to the abuse of power by the seller.⁹⁷ More recent communications from the EC and judgments of the CJEU demonstrate an increasing willingness to acknowledge cognitive biases, thus relaxing the rationality assumption and related implications of the information paradigm. For example, the EC has revamped its definition of vulnerability to include ‘difficulties choosing and accessing products’.⁹⁸ The EC is also assessing whether measures beyond transparency obligations are needed to address cognitive biases, which it considers a ‘dynamic form of vulnerability’.⁹⁹ Similarly, in its case law the CJEU considers that consumer behaviour can deviate from the information paradigm without seller interference, again in line with behavioural economics.¹⁰⁰ For example, the Court has considered that the consumer (1) is less attentive at times, (2) may be led more by impression than by direct comparison¹⁰¹, (3) may lack information and technical capabilities in technical sectors¹⁰² and (4) can be induced to consume sugar due to espoused health claims about products.¹⁰³ It is unclear how these developments impact the information paradigm and consequently, the average consumer standard as applied to PP.

3. Implications

The information paradigm has important normative implications for the risk assessment. Taking a step back, it is necessary to further characterise the risk.¹⁰⁴ From the perspective of the consumer, two risk factors can be distinguished: a profiling risk factor and a counterparty risk factor. The profiling risk factor stems from the fact that the consumer may be (mis)classified in a segment with a higher WTP than his actual WTP or the seller’s uniform price, based on his personal data.¹⁰⁵ The counterparty risk factor stems from the fact that the price charged by the seller is a function of his pricing power and may vary per seller.¹⁰⁶ Those risk factors determine the main risk: if the consumer’s WTP is higher than the uniform price and the seller has the requisite pricing power, the seller will charge the consumer a higher price for the same product than the price charged in the non-personalisation scenario and prices charged by other sellers.¹⁰⁷ This risk materializes if, and only if, the consumer accepts the price. How should the average consumer undertake this assessment? The average consumer should use the information disclosed under the various regulations, available market information and his own basic economic knowledge to assess the likelihood of the risk. To some degree, the assessment is not different from the broader market assessment that the average consumer normally undertakes when considering a purchasing decision: comparing multiple alternatives and selecting the alternative that he believes to be in his best economic interest.

The infusion of behavioural aspects in the information paradigm raises important questions for the risk assessment. Should the calculus follow rational choice theory or does the paradigm accommodate cognitive biases? Furthermore, do ‘disengaged consumers’ deserve protection?¹⁰⁸ Ultimately, the normative question is not whether consumers *actually* take rational purchasing decisions, but whether consumers *can* and *should* take rational purchasing decisions. It seems reasonable to expect a degree of involvement and economic rationality in their purchasing decisions, especially given that (1) the consumers have expressly consented to price personalisation and have been notified of the same, (2) price is a determining factor in the mind of the average consumer¹⁰⁹

and (3) in e-commerce transactions the consumer can, in principle, take as much time as needed to become familiar with the price and other terms attaching to the offer.¹¹⁰ In addition, the consumers can exercise the right of withdrawal during the ‘cooling-off’ period.

Regulators and organisations apparently also consider that disclosure is the appropriate regulatory instrument to enable consumers to mitigate these risks.¹¹¹ The European Commission is of the opinion that transparency obligations suffice, next to supervisory enforcement powers and individual judicial remedies under the existing consumer protection rules.¹¹² The Dutch Consumer and Market Authority warns that impulse buyers, less tech-savvy consumers and or those less engaged to compare prices risk losing out¹¹³, but concludes that informing consumers about market-based solutions and their rights and privacy choices while using the internet, constitutes sufficient protection.¹¹⁴ The European Consumer Organization (BEUC) also proposes that consumers must be clearly informed about personalized pricing.¹¹⁵ Not everybody agrees on the scope of disclosure. For example, the German Federal Conference of Consumer Protection Ministers believes that a notification of price personalization is insufficient; the company should present consumers with the same reference price for the same product and deviations from the reference price should be transparently communicated to them.¹¹⁶

V. Concerns: Decision-Related Harm

PP has prompted strongly diverging views on consumer welfare. Some commentators posit that the practice can be beneficial for consumers, as PP can increase total output and economic welfare by including consumers who cannot afford

96 Council resolution of 14 April 1975 (n 87); Straetmans (n 89).

97 *Ibid.* See also the section on UCPD (III.4).

98 European Commission, *Understanding consumer vulnerability in the EU’s key markets* (Factsheet, 2016) < https://ec.europa.eu/info/sites/default/files/consumer-vulnerability-factsheet_en.pdf > accessed October 2021.

99 *Ibid.*

100 Kai Purnhagen, ‘More Reality in the CJEU’s Interpretation of the Average Consumer Benchmark – Also More Behavioral Science in Unfair Commercial Practices’ (2017) 8 *European Journal of Risk Regulation* 437.

101 T-363/04 *Koipe Corporación*, [2007] ECLI:EU:T:2007:264, para 109.

102 C-54/17 and C-55/17 *Wind Tre and Vodafone Italia*, [2018] ECLI:EU:C:2018:710, paras 52-54.

103 T-100/15 *Dextro Energy GmbH & Co. KG v European Commission* [2016] ECLI:EU:T:2016:150, para 60.

104 The assessment mentioned in the recital seems to assume that the consumer has already shared his personal data with the seller. Therefore, the risk assessment focuses on the risks following that disclosure.

105 See section II.4.

106 See section II.2.

107 This difference is the ‘harm’ in the theories of harm outlined in section V.

108 For a description of the disengaged consumer, see Siciliani, Riefa and Gamper (n 2) chapter V. B.

109 Case C-922/19 *Stichting Waternet* [2021] ECLI:EU:C:2021:91, para 56.

110 Opinion of A-G Campos Sánchez-Bordona on Case C-628/17 *Orange Polska* [2019] ECLI:EU:C:2019:74, para 57 *et seq.*

111 See for a critique of disclosure requirements as an effective form of protection, Bar-Gill and Ben-Shahar (n 6). Also note that not all regulators believe disclosure is sufficient. See for example, the UK Competition and Markets Authority’s perspective, in OECD, ‘Personalised Pricing in the Digital Era. Note by the United Kingdom’ (28 November 2018) DAF/COMP/WD (2018) 127, section 3.2.

112 European Union (n 32).

113 Autoriteit Consument en Markt, *Personalized Pricing in the Digital Era – Note by the Netherlands* (JT03440143, 28 November 2018) 6-7.

114 *Ibid.*, 9-10.

115 BEUC, *Ensuring Consumer Protection in the Platform Economy* (BEUC-X-2018-080, 2 October 2018).

116 Verbraucherzentrale Bundesverband, *Personalisierte Preise* (Diskussionspapier, 23 September 2016) 38-42.

to pay the uniform price.¹¹⁷ Commentators opposed to PP argue that the practice has negative financial consequences for consumers, even if they are informed of the practice. Some commentators believe that PP harms *all* consumers, because they would (1) pay higher prices¹¹⁸, (2) lose trust in markets, (3) need to shop around more (incurring higher search costs) and (4) have to take costly steps to avoid being charged a premium.¹¹⁹ Other commentators state that PP always harms *some* consumer segments, in particular vulnerable or low-income consumers.¹²⁰ Special criticism is levelled against PP for its purported redistributive effects, especially if some consumer segments (*e.g.* vulnerable, low-income) pay higher prices and other consumer segments (*e.g.* high-income, sophisticated) pay lower prices.¹²¹ This section analyses the nature of this harm, to the extent attributable to the consumer's calculus, in greater detail.¹²²

1. Defining Harm

The theoretical framework commonly used to analyse the economic consequences of PP for consumers, is the economic welfare or *Marshallian surplus* framework.¹²³ This microeconomic framework distinguishes between the gains from trade (surplus) accruing to the seller or producer (*producer surplus*), and to the gains accruing to the consumer(s) (*consumer surplus*). The individual consumer's surplus is the difference between his WTP and the transaction price of the unit of the product sold to him.¹²⁴ The aggregate consumer surplus is the difference between the sum of the consumers' WTPs and the sum of the transaction prices of the units sold to them.¹²⁵ By contrast, the producer's surplus is the difference between the transaction price and the cost of production of that unit of the product.¹²⁶ Similarly, the producer's aggregate surplus is the difference between the sum of the transaction prices and the sum of the costs of production of the sold units.¹²⁷ A common benchmark for the analysis of the personalized prices is the market price of the product in a perfectly competitive market without price discrimination. The benchmark serves as the counterfactual to estimate the magnitude and direction of the economic consequences. Using this benchmark, individual harm could be defined as the difference between the individual consumer's surplus in the PP scenario versus the benchmark scenario. Collective harm could be defined as the difference between the aggregate consumer surpluses in both scenarios.

The diagram illustrates the framework. P_c represents the market price asked by all sellers in a perfectly competitive market. P_i (with $i = \{1, 2, 3, 4\}$) is the personalized price posted for an individual consumer (which equals his WTP).

The diagram also visualises the two main potential effects of PP on *aggregate* consumer surplus. On the one hand, as the seller charges consumers personalized prices in excess of P_c , the seller can appropriate the aggregate consumer surplus (appropriation effect).¹²⁸ At the same time, the seller can sell products to consumers with WTPs below P_c , thus expanding the market by serving more consumers (market expansion effect).¹²⁹ Aggregate consumer surplus increases if the market expansion effect is greater than the appropriation effect and decreases if the latter effect exceeds the former effect, *ceteris paribus*.¹³⁰ In other words, PP may benefit or harm consumers collectively.

The diagram also visualises potential redistributive effects (transfers of surplus *between* consumers). For example, in the benchmark scenario, consumer 4 (P_4) would not purchase the product and consumer 3 (P_3) would enjoy a surplus. In case of PP, the seller can now use the surplus appropriated from the sale to P_3 in order to sell the product to P_4 below cost (at a loss). Charging a price below economic cost for some consumer groups or products while recouping this loss through profitable sales of the same product to another consumer segment (*e.g.* at higher prices), is called *cross-subsidisation*.¹³¹ While cross-subsidisation is intrinsic to some markets and business models, consumer choice plays an essential role, as explained below.¹³²

2. Theories of Harm

In support of their positions on PP, regulators and scholars have formulated 'theories of harm', *i.e.* explanations of mechanisms through which consumers may be harmed by PP as they accept to pay higher prices than in the benchmark scenario due to their purchasing decisions.¹³³ A few main theories are discussed below (the analysis is not exhaustive).

117 UK Competition and Markets Authority, *Algorithms, competition and consumer harm: call for information* (19 January 2021) <www.gov.uk> accessed October 2021.

118 Oren Bar-Gill, 'Algorithmic Price Discrimination: When Demand Is a Function of Both Preferences and (Mis)perceptions' (2019) 86 *University of Chicago Law Review* 217; Ramsi Woodcock, 'Personalized Pricing as Monopolization', 51 *Connecticut Law Review* 311.

119 UK Competition and Markets Authority (n 117).

120 Agustín Reyna, 'The Price Is (Not) Right: The Perils of Personalisation in the Digital Economy' (*Informaconnect*, 4 January 2019); Citizens Advice, 'A price of one's own – An investigation into personalised pricing in essential markets' <<https://www.citizensadvice.org.uk/>> accessed October 2021.

121 See, in a consumer credit context, Natasha Sarin, 'Making Consumer Finance Work' (2019) 119 *Columbia Law Review* 1519; Oren Bar-Gill, *Seduction by Contract – Law, Economics and Psychology in Consumer Markets* (Oxford University Press 2012) 100-101.

122 Consequently, the discussion of harm arising from competitive dynamics, discrimination, algorithmic bias and other factors is out of scope.

123 Siciliani, Riefa and Gamper (n 2), chapter 4; OECD (n 15) 5.

124 Steven Landsburg, *Price theory and its applications* (Cengage Learning 2013) 224-226; Hal Varian, *Intermediate Microeconomics with Calculus* (W. W. Norton and Company 2014) 257.

125 Landsburg (n 124), 224-226; Varian (n 124), 258-261.

126 Landsburg (n 124), 226-228; Varian (n 124), 265-267.

127 Landsburg (n 124), 226-228; Varian (n 124), 265-267.

128 OECD (n 15) 5.

129 OECD (n 15) 5. Matthew Edwards (n 18) 586-591.

130 OECD (n 15) 5.

131 FCA, *Price discrimination and cross-subsidy in financial services* (Occasional Paper No. 22, September 2016) 14; Siciliani, Riefa and Gamper (n 2) chapter 5.V.

132 Oxera, 'Should we be cross about cross-subsidies? Experience from the financial services sector' (*Oxera Insights*, March 2017) <<https://www.oxera.com/insights/agenda/articles/>> accessed October 2021, for an example in the consumer credit context.

133 UK Consumer and Market Authority (n 117). On consumer theories of harm generally, see Siciliani Riefa and Gamper (n 2).

a) Information Asymmetry

One theory is the ‘information asymmetry’ theory, which would apply to *all* consumers. Most consumers do not know the volume and detail of their personal data – as well as inferences and behavioural predictions based on these data – that sellers or their data intermediaries use to personalize prices, giving rise to information asymmetries.¹³⁴ The theory posits that seller’s predictions and inferences are very accurate, more accurate than the individual consumer’s self-knowledge, allowing the seller to estimate WTPs with great precision.¹³⁵ In some variations of the theory, it is also assumed that the seller can (and will) use this information to present the product and the price in such a way that the consumer will accept a higher personalized price, using the consumers’ cognitive biases to ‘inflate’ their WTPs.¹³⁶

One can formulate reasonable objections to this theory. First, technology should not be equated with accuracy. Predicting behaviours and inferring personal characteristics from data is not free from errors.¹³⁷ Algorithms may correctly estimate WTPs, but may also produce errors that lead to misclassification and *overpricing* if the estimates are too high. Sellers want to avoid overpricing, as consumers may reject the prices and search for alternatives elsewhere.¹³⁸ Second, consumers have access to alternative sources of information to make their purchasing decisions, which contain elements that are reasonably conducive to ‘debiasing’ product perceptions by consumers.¹³⁹

There are other, non-PP specific information asymmetries that may arise, such as the degree of information on price-quality relationships in case of incomplete or insufficient market information collection and analysis by the consumer.¹⁴⁰ The harms that could arise from these asymmetries are likely to coincide with self-sorting.

b) WTP Disparities Between Self-Sorted Segments

A major theory of harm posits that *specific* consumer groups are harmed by PP due to price discrimination between self-sorted segments¹⁴¹. Remember, sellers can only engage in PP if they can identify which consumers are more price sensitive than others.¹⁴² Observed consumer decisions are data points that can be used for this purpose.

One commonly cited sorting variable is consumer sophistication. One could distinguish between consumers behaving as ‘the average consumer’ (sophisticated consumers) and consumers deviating from this standard (naïve consumers).¹⁴³ A seller could offer a range of varieties of the same product, with clear differences in price-quality or contract terms. The sophisticated consumer, possessing more information and ability to assess the risk and take rational purchasing decisions, is more price sensitive and is more likely to avoid inferior varieties.¹⁴⁴ By contrast, the naïve consumer possessing less information and less ability to assess the risk, is less price sensitive and may choose inferior varieties. As the consumers identify themselves via their initial choices, the seller can tailor his PP algorithms to these different segments, post higher prices in the naïve segments and even cross-subsidise product features for sophisticated consumers with revenues from the naïve segments.¹⁴⁵ Sellers can also use privacy decisions as an alternative sorting variable.¹⁴⁶

This ‘self-sorting theory’ turns in fact on the combination of PP with self-sorting and posits that the most naïve consumers would always pay higher prices than less naïve and sophisticated consumers. The theory focuses more on price sensitivity and the well-known differences in information processing by

consumers, rather than PP specifically. In addition, the theory does not include the positive effects that alternative sources of information and consumer education may have on consumer sophistication.¹⁴⁷

c) Price Dispersion

A third major theory of harm turns around price dispersion, *i.e.* the state of the market in which sellers charge significantly differing prices (*e.g.* 30 %) for the same product¹⁴⁸. The essence of the mechanism is that in a state of the world in which most or all companies use PP, the resulting price dispersion would confuse consumers. As they would be unable to determine the ‘market price’ due to the observed price differences (or would find it too costly to calculate the price), they would lack a reference price for their purchasing decisions. Consequently, individual consumers would be more likely to accept higher prices.¹⁴⁹

One could disagree with the assumptions of this theory. First, the assumption that consumers are solely reliant on sellers’ price signals and do not rely on alternative sources of information, is hard to maintain. Second, the assumption that posted prices are credible price signals is questionable, as they are hardly reflective of the prices actually paid by consumers (pocket prices).¹⁵⁰ In many markets, sellers combine uniform posted pricing with personalized discount codes or use discounting so frequently that reference prices have lost their meaning as an indicator of what other consumers pay for the same product.¹⁵¹ Sometimes, posted prices are even intentionally misleading, which further undermines their value as credible price signals.¹⁵² Third, it is very unlikely that in markets

134 Zuboff (n 5).

135 *Ibid.*

136 Bar-Gill (n 118); Siciliani, Riefa and Gamper (n 2), chapter 4.II.A; Christine Riefa, ‘Consumer Law Enforcement as a Tool to Bolster Competition in Digital Markets: A Case Study on Personalized Pricing’ in UNCTAD, ‘Competition and Consumer Protection Policies for Inclusive Development in the Digital Era (UNCTAD/DITC/CPLP/2021/2, 2021), 15-30.

137 Ipsos, London Economics and Deloitte Consortium (n 25) 55; Mikella Hurley and Julius Adebayo, ‘Credit Scoring in the Era of Big Data’, 148 (2016) *Yale Journal of Law and Technology* 152 *et seq.*

138 See section II.2.

139 See section VI. below.

140 Siciliani, Riefa and Gamper (n 2), chapter 4.II. B.

141 Self-sorting occurs when consumers sort themselves by their own choices into different WTP groups, see Edwards (n 18) 568 and the literature cited therein. The phenomenon is also called ‘self-selection’, see Phillips (n 15) 127.

142 Perloff (n 11), 413.

143 See Siciliani, Riefa and Gamper (n 2), chapter 5.I makes this distinction.

144 *Ibid.*

145 Siciliani, Riefa and Gamper (n 2), chapter 5.V; Xavier Gabaix and David Laibson, ‘Shrouded Attributes, Consumer Myopia, and Information Suppression in Competitive Markets (2006) 121 *Quarterly Journal of Economics* 505, in the consumer credit context.

146 Townley, Morrison and Yeung (n 81) 697-698.

147 See section VI. below.

148 Michael Baye, John Morgan and Patrick Scholten, ‘Information, Search and Price Dispersion’, in Terrence Hendershott (ed), *Economics and Information Systems, Volume 1* (Emerald Group Publishing Limited 2006) 323-376, 323 *et seq.*

149 Verbraucherzentrale Bundesverband (n 88). See also Riefa (n 136).

150 Walter Baker, Michael Marn, Craig Zawada, *The Price Advantage* (McKinsey 2010), 26 *et seq.*

151 David Streitfeld, ‘It’s Discounted, but Is It a Deal? How List Prices Lost Their Meaning’ *New York Times* (New York, 6 March 2016); Rafi Mohammed, ‘Are You Really Getting a Discount, or Is It Just a Pricing Trick?’ (Harvard Business Review, 23 March 2016) < <https://hbr.org/2016/03/> accessed October 2021.

152 UK Office of Fair Trading, ‘Investigations into the use of misleading reference pricing by certain furniture and carpet businesses’ (Gov.uk, 28 June 2014) < <https://www.gov.uk/> accessed October 2021; UK Competition and Markets Authority, ‘Hotel booking sites to make major changes after CMA probe’ (Gov.uk, 6 February 2019) < <https://www.gov.uk/> accessed October 2021.

characterised by some form of price competition, firms will cease to post competitive uniform prices as pricing remains a key tool to attract consumers in those markets.¹⁵³

3. Synthesis

The analysis of the theories of harm outline above shows that there is no reason to believe that PP is *per se* harmful to all consumers. Moreover, while certain consumers are more exposed to potential harms, they could mitigate these harms by relying on alternative sources besides sellers for information.

VI. Improving Decisions with Alternative Sources of Information

The essential conclusion of the preceding section is that some consumers may improve their purchasing decisions if they can have access to alternative sources of information. If this information effectively processes ‘raw’ market information into easily digestible outputs, reliance on these sources may have an even greater effect on their decisions. This section discusses several common alternative sources.

1. Market-Based Sources

In some markets, consumers can resort to several market-based sources of information. One source is the price comparison website.¹⁵⁴ Price comparison websites are operated by commercial operators or not-for-profit operators, such as consumer organizations.¹⁵⁵ Using these websites provides consumers with multiple benefits: they find market information while reducing their search costs and they may become more price sensitive.¹⁵⁶ Nevertheless, the websites are relatively underutilised: one study found that 84 % of consumers on average use online search, but only 38 % of consumers use comparison websites.¹⁵⁷ While the transparency and market coverage may vary, the websites are generally found to be informative.¹⁵⁸ Another market-based source is the in-depth investigation. In the past, news organisations have provided detailed accounts of PP practices in various market sectors.¹⁵⁹ While the investigations may not be useful to obtain current market information, they allow consumers to further their general understanding of PP in those sectors.

2. Government-Based Sources

Publications of governmental organizations are another important source of information on PP and market prices. For example, EU and national supervisory authorities conduct investigations (*sweeps*) of prices on e-commerce sites and publish the findings of these investigations, allowing consumers to gain an understanding of price disclosure on these sites ahead of their own information gathering efforts.¹⁶⁰ In addition, governmental organisations also publish general information such as price indices, providing consumers with reference points on general price levels to guide their purchasing decisions.¹⁶¹ Depending on their scope and frequency, these publications may provide extensive and current information.

3. Association-Based Sources

Consumer associations are the most pertinent association in this regard.¹⁶² These associations have an essential role in improving consumer information and knowledge.¹⁶³ First, consumer organizations routinely disseminate educational materials intended to provide consumers with a basic understanding of specific products or practices.¹⁶⁴ Second, these associations conduct product comparison tests and surveys among their members that provide consumers with useful

information in the form of price-quality assessments and opinions from peers.¹⁶⁵ Third, consumer associations may provide legal advice or respond to specific consumer queries regarding specific products, practices or companies.¹⁶⁶ In sum, consumer associations tend to disseminate information that synthesizes ‘raw’ market information into opinions, reports or advice. Consumers can significantly facilitate their transactional deliberations when relying on these publications.

4. Regulatory Disclosures

It is important to highlight that consumers will also rely on regulatory disclosures for information. For example, the information on the consequences of profiling *ex* Articles 13 and 14 GDPR mentioned above, provides insights for the assessment that should be understandable to the average consumer. Interested consumers can also consult summaries of the regulations that limit the use of PP by sellers, thus facilitating the risk assessment.¹⁶⁷ Those regulations cover *inter alia* competition, non-discrimination and soon also artificial intelligence.¹⁶⁸ Under the proposed Artificial Intelligence Act, which would also apply to PP, sellers would be subject to requirements that address bias, quality manage-

153 Price is one of the key components of the ‘marketing mix’. See Philip Kotler and Gary Armstrong, *Principles of Marketing* (17th edition, Pearson 2017) 306 *et seq.*

154 OECD (n 15).

155 See for example the energy services comparison site of the Dutch *Consumentenbond* <<https://www.consumentenbond.nl/energie-vergelijken/>> accessed October 2021.

156 Russel Winer, ‘Pricing in the Digital Age’, in Michael R. Solomon and Tina Lowrey (eds), *The Routledge Companion to Consumer Behavior* (Routledge 2018) 201.

157: London Economics, VVA Consulting and Ipsos Mori consortium, *Consumer vulnerability across key markets in the European Union* (2016) <ec.europa.eu> last accessed October 2021, annex 5.

158 Their usefulness may vary. Some site operators may limit the transparency and comparability of offers through price obfuscation, or limit the selection to offers from sellers from which they receive commissions. See e.g. the resolutions of the Federal Consumer Protection Conference, *Ergebnisprotokoll der 12. Verbraucherschutzministerkonferenz am 22.4.2016 in Düsseldorf*, <<https://www.verbraucherschutzministerkonferenz.de>> accessed October 2021.

159 See for an example, Stephanie Clifford, ‘Shopper Alert: Price May Drop for You Alone’ *New York Times* (New York, 9 August 2019).

160 European Commission, ‘Online shopping: Commission and consumer protection authorities call for clear information on prices and discounts’, which publishes the result of an EU-wide screening of 560 e-commerce websites (<https://ec.europa.eu/commission/presscorner/detail/en/IP_19_1333>, accessed June 2021).

161 European Commission, ‘How communication prices vary across the EU’ (*Eurostat News*, 21 December 2020) <<https://ec.europa.eu/eurostat/web/products-eurostat-news>> accessed October 2021.

162 Other not-for-profit organisations may also provide consumers with independent information, such as charities and foundations.

163 Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions, ‘A European Consumer Agenda – Boosting confidence and growth’, COM/2012/0225 final.

164 Hans Micklitz and Geneviève Saumier (eds), *Enforcement and Effectiveness of Consumer Law* (Springer International Publishing AG 2018) 25. See for example the German *Verbraucherzentrale*, ‘Marktbeobachtung’ <www.verbraucherzentrale.de> accessed October 2021.

165 Micklitz and Saumier (n 164). See for example the website of the Belgian *Test Aankoop* <test.aankoop.be> accessed October 2021.

166 For example, the *Juridisch Advies* service of the Dutch *Consumentenbond* <<https://www.consumentenbond.nl/juridisch-advies>> accessed October 2021.

167 These summaries are specifically written for the general public. See for example the European Commission’s website on non-discrimination in the ‘know your rights’ section <<https://ec.europa.eu>> accessed October 2021.

168 European Commission, ‘Proposal for a Regulation laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts’ COM(2021) 206 final. See also Recital 40 CCD Proposal.

ment and other operational risk factors that consumer may find useful to refine their risk assessments.

5. Synthesis

When assessing personalized prices, consumers are not confined to information provided by sellers. In some Member States, consumers have access to information from a variety of alternative sources, ranging from price comparison websites to consumer surveys. This information does not only consist of 'raw input data' such as prices, but also 'processed' information such as educational materials from consumer associations that could improve the consumers' decision-making processes. In addition, inquisitive consumers can easily obtain basic information on regulatory frameworks to further inform their risk assessments. These alternative sources of information are intended for the general public and thus designed to be sufficiently accessible to consumers at all levels of sophistication. Consequently, they are reasonably conducive to positively impact their purchasing decisions.

VII. Conclusion

This aim of this article was to analyse how EU consumer law expects consumers to make transactional decisions and assess the transactional risk when faced with personalized prices. The article reviewed the various models of the consumer's transactional decisions, which differ in the underlying assumption of economic rationality, including the model underlying EU consumer law. The information paradigm in EU consumer law as operationalised with the 'average consumer' standard, assumes a certain degree of economic rationality,

albeit that the case law of the Court of Justice of the European Union does not provide clear guidance on the exact degree of economic rationality. Applying the average consumer standard to the risk assessment leads to the conclusion that the consumer can be expected to use market information, regulatory disclosures and basic economic knowledge to inform his purchasing decisions.

The article also discussed concerns of economic harm to consumers arising from PP. Using the Marshallian surplus framework, the article assessed theories of harm put forward by certain regulators and scholars in support of the position that PP is *per se* harmful to some or all consumers. These theories are yet to be rigorously empirically validated and are not without reasonable objection. The reality is that the economic consequences of PP depend on a host of factors that need further study. However, to the extent that certain consumer segments could suffer decision-related harm when making purchasing decisions, this potential harm could be mitigated through increased reliance on information provided by alternative sources, such as comparison websites, consumer organizations and government agencies.

PP is often framed as an undesirable form of price discrimination, but many societies have a long history of embracing forms of price discrimination conditioned on person-specific characteristics that can promote overall economic welfare and greater access to goods and services for all consumers. It is therefore important that this practice continues to exist in the digital age and that consumers make use of all available information to make decisions that further their economic interests when transacting with sellers that apply PP. ■

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Dark Patterns: Light to be Found in Europe's Consumer Protection Regime

I. Introduction

Much of the academic scholarship on the regulation of 'dark patterns' has focused on privacy and data protection legislation.¹ The term 'Dark patterns' has been deployed to describe 'deceptive' and 'manipulative' design techniques implemented

in a way that led to a user's behaviour that would not have happened without the dark pattern.² Scholars use the term broadly and informally: 'tricks used in websites and apps that make you do things that you didn't mean to, like buying or signing up for something'³. They are also defined broadly and formally: for example, Gray *et al.* state that dark patterns are 'interface designs that try to guide end-users into desired behaviour through malicious interaction flows'.⁴ Some definitions are narrower and specific to the discipline of informa-

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1 Christoph Bösch, Benjamin Erb, Frank Kargl, Henning Kopp, and Stefan Pfattheicher, 'Tales from the dark side: Privacy dark strategies and privacy dark patterns' (2016) 4 Proceedings on Privacy Enhancing Technologies 237-254; Lothar Fritsch and others (eds.) 'Privacy dark patterns in identity management' In *Open Identity Summit (OID) 2017*, Lecture Notes in Informatics (LNI), Gesellschaft für Informatik, Bonn 2017, 93-104; Lior Strahilevitz and others, Subcommittee report: 'Privacy and data protection' (2019) Stigler Center Committee for the Study of Digital Platforms, 22-23; Midas Nouwens, Ilaria Liccardi, Michael Veale, David Karger, and Lalana Kagal (2020) 'Dark Patterns after the GDPR: Scraping Consent Pop-ups and Demonstrating their Influence' *ArXiv preprint ArXiv:2001.02479*; Damian Clifford, 'Citizen-consumers in a personalised galaxy: Emotion influenced decision-making, a true path to the dark side?' (2017) CiTiP Working Paper Series, 31/2017, accessed <<https://ssrn.com/abstract=3037425>> or <<http://dx.doi.org/10.2139/ssrn.3037425>> 5 November 2021.

2 Colin M Gray, Yubo Kou, Bryan Battles, Joseph Hoggatt, and Austin L Toombs, 'The dark (patterns) side of UX design' (2018) Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems, Paper 534, Pages 1 – 14 <<https://dl.acm.org/doi/10.1145/3173574.3174108>> accessed 5 November 2021 (pp. 1-14); Christoph Bösch, Benjamin Erb, Frank Kargl, Henning Kopp and Stefan Pfattheicher, 'Tales from the dark side: Privacy dark strategies and privacy dark patterns' (2016) 4 Proceedings on Privacy Enhancing Technologies 237-254; The Organisation for Economic Co-operation and Development considers dark patterns as "long-recognised deceptive commercial practices that violate consumer laws, such as drip pricing and subscription traps (to the extent they are facilitated by website design), as well as newer techniques such as scarcity or urgency cues or misdirecting consumers e.g. into consenting to privacy-intrusive settings".

3 Harry Brignell, 'What are dark patterns?' (2018) <<https://darkpatterns.org>> accessed 5 November 2021.

4 Gray and others (n 3) 12.