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ALGORITHMIC PERSONALISATION OF CONSUMER TRANSACTIONS AND THE LIMITS OF CONTRACT LAW

ABSTRACT

Firms increasingly use artificial intelligence (AI) and massive amounts of data to target consumers, influence consumers' choices and tailor the contracts consumers enter in online markets. Algorithmic transactions include personalised contracts driven by data extracted from consumers based on their acceptance of the terms of use of a specific application, but often simply based on their online behavior and without their consent or even their knowledge. Contract personalisation can conceivably improve consumers' surplus from transactions and hence their welfare, but it can also enable firms to exploit consumers' biases and appropriate most or all of the surplus generated by contracts. In this latter case consumer protection is in serious danger.

This article argues for a broad approach to consumer protection in this context. First, consumer protection in algorithmic market transactions cannot be disconnected from the analysis of terms of use contracts or from the dynamics of data markets. Second, consumer protection cannot be addressed only with contractual instruments. The complex structure of algorithmic contractual relationships and the spill over between them requires contract law instruments but also the adoption of public policy measures.

JEL CLASSIFICATION: K12, K22, K24, K33

SUMMARY

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1 Introduction

The Internet and web-based business networks have enabled new forms of economic interaction through social networks and multi-sided markets.[1] Many markets and new market segments now exist within digital environments and are heavily influenced by network effects,[2] creating new market dynamics resulting, in many cases, in imperfectly competitive structures. One type of market for which these effects are key are multisided markets. This type of market arises in websites, applications and online platforms where individuals exchange goods or services, and where network effects are present in the demand and the supply side and crossed network effects link the two sides.

Recent decades have seen enormous growth, both in Europe and globally, in the number of transactions and in the economic importance of each transaction in these new digital markets. For example, between 2014 and 2019 the proportion of internet users in the EU who entered into a transaction for goods or services in digital networks increased from 63% to 71% overall, rising above 80% in certain EU states.[3] This phenomenon has become increasingly important in our societies not only due to its growing economic significance but also due to the opportunities it brings to consumers through wider choices of goods and services, lower transaction costs and greater information for making decisions. At the same time, though, there is also an exponential increase in the data that businesses are collecting on consumers' characteristics, preferences and behaviour, and in the power of the hardware and algorithms used to analyse this data for personalising consumer choices and contract terms.

Digital markets enable a market environment with low transaction costs and negligible entry costs. Participants in these markets – individuals and businesses – often engage on both the demand side and the supply side. Digital markets offer

[1] This research focuses on multi sided market platforms – including multi sided market applications– that show network effects, of particular importance for consumer welfare.
[2] S.J. Liebowitz and Stephen E. Margolis, «Network Externality: An Uncommon Tragedy» [1994] Journal of Economic Perspectives 133.
[3] European Commission, A European agenda for the collaborative economy, COM(2016) 356.

consumers contractual bundles, which combine data agreements[4], encapsulated in terms of service (ToS) and privacy agreements, with contracts governing the underlying consumer transaction.[5]

Leveraging machine learning[6] and other forms of artificial intelligence,[7] these networks use consumer data to personalize a range of consumer experiences, from market choices to contract terms. The asymmetric information structure and its impact on the potentially personalised design of market transactions is of especial importance when focusing on transactions involving business and consumers, which are already inherently asymmetric contractual structures.

The use of data in digital markets and online contracts for digital and non-digital products is neither new nor unique to multi-sided markets. However, the large-scale use of consumers' data enabled by artificial intelligence (AI) and machine learning results in processing massive amounts of data points that make it possible to obtain remarkably accurate information about market participants, including inferences of their preferences, choices, and interests. This makes it possible to design and structure the transactions they enter into in a personalised way.[8]

The multi-contractual and multidimensional structure of consumer transactions in digital markets challenges the adequacy and effectiveness of some of the legal mechanisms for consumer protection currently in place, particularly those mechanisms focused on commercial practices, pre-contractual information, and ex post control of standard contract terms. This makes it difficult for consumers to protect

[4] Data agreements refer to the terms of service and privacy agreements that internet users (consumers) enter into when accessing a website, downloading an online application or participating in an online multi-sided market platform. These standard agreements establish the terms of use of the website or application and the personal data collected during the user's online activity. From this perspective they enable drawing an accurate picture of the consumer's personal, profesional, economic profile and of its market choices. See Sandra Wachter and Brent Mittelstadt, «A Right to Reasonable Inferences: Re-Thinking Data Protection Law» in the *Age of Big Data and AI* (2018). 10.31228/osf.io/mu2kf and Zuiderveen Borgesius, F. & Poort, J. (2017). Online Price Discrimination and EU Data Privacy Law. *J Consum Policy* 40, 347–366 noting the importance of consumer's data in personalising digital consumer contracts.

[5] Natali Helberger et al, EU Consumer Protection 2.0: Structural asymmetries in digital consumer markets, [2021] BEUC (<https://www.beuc.eu/publications/beuc-x-2021-018_eu_consumer_protection.0_0.pdf> accessed 31 March 2022) and Christopher Koopman et al, The Sharing Economy and Consumer Protection Regulation. The Case for Policy Change [2015] 8 Journal of Business, Entrepreneurship & the Law 529.

[6] Machine learning is the process through which computers are trained to learn and recognize patterns based on a model given to them and data fed to them. The dynamic learning process involved in machine learning has remarkable implicatins for consumers given that their data in a given moment in time may allow computers to learn about preferences and choices and infer about future decisions consumers may take. See Rory Macmillan, Big Data, Machine Learning, Consumer Protection and Privacy (July 26, 2019). TPRC47: The 47th Research Conference on Communication, Information and Internet Policy 2019, Available at SSRN <https://ssrn.com/abstract=3427206> accessed 31 March 2022

[7] Artificial intelligence involves computer techniques that aim to replicate some aspects of human and animal cognitive processes in computers. See Rory Macmillan, «Big Data, Machine Learning, Consumer Protection and Privacy» (July 26, 2019). TPRC47: The 47th Research Conference on Communication, Information and Internet Policy 2019, Available at SSRN: https://ssrn.com/abstract=3427206

[8] This paper will focus on the contract regulating the consumer transaction, not on the personalised information or targeted advertisement consumers may be exposed to.

their interests in transactions and their experiences in markets, endangering the effectiveness of the EU's legal framework for consumer protection, which is one of the Union's fundamental principles[9] and a mandate for public authorities at both the EU and member states levels.[10] Ensuring that consumers are capable of acting according to their market choices while being able to meet their expectations from the transactions they enter into is a core element of the internal market. Some steps have been adopted to counter this trend, but they are at risk of being outpaced by the rate at which consumers are participating in online digital markets and the speed of technological development.

This paper aims at presenting the ways these digital markets can threaten consumer protection and argues that contract law instruments fall short in ensuring a level of consumer protection at least equivalent to the one afforded in non-digital transactions.

2 Transaction personalisation: from street markets to Artificial Intelligence

The personalisation of transactions is not a new phenomenon nor is it an infrequent one. In fact, it occurs more frequently than is generally understood. Certain transaction contexts are particularly conducive to personalisation. For example, street market sellers may charge different prices depending on whether the customer is perceived to be a regular client, a tourist, someone with a high income, or someone who is informed about the product. At the same time, depending on the type of store and the type of demand the store has, transactions may also show different characteristics. For example, small fruit stores may reduce prices for produce that is close to spoiling, may give special deals to regular customers based on stock, or may give informal credit to customers who they think will pay later while not offering it to others. In other words, transaction terms in a range of traditional markets are uniform across consumers or across time, and this heterogeneity may be due to the characteristics of suppliers (e.g. small stores with regular long-term clients), the characteristics of consumers (e.g. repeated buyers versus tourists), and the relationship between them. Personalisation of transactions, in this context, often enhances the surplus generated by the transaction and has positive effects for both parties given that it enhances the characteristics of the contract object to the buyer's preferences, it generates trust between them and hence reputation on both that they will want to protect so that can ensure future transactions in favorable conditions for both. However, this context could also result in harmful effects for the consumer. For example, when consumers are perceived to be tourists

[9] Article 38 of the Charter of Fundamental rights of the European Union (2000/C 364/01).
[10] Article 169 of the Treaty on the Functioning of the European Union [2012] OJ C/326, p. 47–390.

and the value of trust and reputation is low, contactual conditions may be worse than if consumers were local and likely to enter into future transactions with the seller. However, the variables, dynamics, and positions of both parties in digital contracts is remarkably different as compared to non-digital contracts. At the same time, the structure and dynamics of the transaction – and of its contractual personalised design – is also very different between digital and non-digital transactions.

Digital transactions involve a multi-contractual and multi-dimensional contractual structure: a first phase involves the unavoidable decision regarding the access and eventually processing of the consumer's personal data. In this first phase consumers must decide through accepting, rejecting or configuring the privacy policy, the personal data they are willing to share and eventually allow processing through machine learing and other forms of AI. A second phase involves entering into the transaction itself – for example, for the purchase of a good or a service.[11]

AI enables personalisation of online transactions. This personalisation reaches a new dimension of refinement from different perspectives. First, AI enables personalisation of all phases of market transactions: from personalisation of advertisement and hence of the choices consumers may have access to, to personalisation of transaction terms – contract personalisation – and eventually personalisation of remedies. AI, thus, allows for personalising all the market transaction cycle: from consumer's choices to transaction contract terms.

Second, AI allows for a more precise personalisation. AI allows for individual personalisation beyond the traditional segment-based personalisation. Non-AI personalisation tends to personalize consumers or targets often relying on objective discretional and static criteria such as age, gender, income level, education level. AI allows for personalisation in the broad sense not only on personal characteristics – in contrast with group characteristics that would allow for segmentation – but also on dynamic variables such as the information provided by the consumer, or extracted from the consumer's online activity, past purchases and personal or professional context. AI makes it possible to combine variables reflecting consumer characteristics in a dynamic way, personalising transactions based on these variables and adjusting the personalisation in real time as the data and variables change. Personalisation, thus, can be more tightly tuned to the consumer's characteristics at any given point in time, adjusting as those characteristics change.

Third, AI allows for the improvement and constant enhancement of personalisation of market transactions. Al, through machine learning, makes it possible to improve transaction personalisation based on data provided by the consumer regarding

[11] See Frederik Zuiderveen Borgesius and Joost Poort , Online Price Discrimination and EU Data Privacy Law [2017] J Consum Policy 347 and Michèle Finck, The Limits of the GDPR in the Personalisation Context [2021] in U. Kohl, J. Eisler (eds), Data-driven Personalisation in Markets, Politics and Law, Cambridge University Press.

preferences, interests and ultimately choices. AI, in contrast with non-AI personalisation, has the capacity to modify choices and terms and to experiment with consumer preferences, adjusting choices and terms not only based on the interaction between the consumer and the platform, but also based on the stream of aggregate data that network markets have on consumers' preferences, profiles and choices. With more information collected and processed, AI can offer consumers better, or better tailored, terms.

The use of AI, *per se*, though, is neither positive nor negative for consumers. On one hand, AI may allow consumers to have a better experience in markets, to adjust choices to their preferences, and to receive standard contract terms that enable them to enter into transactions and enjoy greater contract surpluses.[12] On the other hand, AI may enable sellers to condition and limit consumers' choices by presenting information in a way incompatible with the Unfair Commercial practices directive,[13] enable professional sellers to use consumers' data without their knowledge or actual consent, exploit consumers' biases and cognitive limitations, and ultimately strip any contract surplus from consumers.[14] At the extreme, AI may also result in discrimination against consumers based on gender or race, for example, violating their fundamental economic rights of access and participation in online markets , in enjoying similar contract terms, and ultimately in enjoying economic advantage from market transactions.[15]

AI potentially enables the maximisation of the consumer's market experience. However, AI also allows for the inference and use of valuable information on consumers' characteristics regarding preferences, choices, habits and, most importantly, willingness to pay for a product or service. From this perspective, AI can expose consumers in digital markets while enabling sellers and online markets to assess, with remarkable accuracy, the contract terms the consumers are likely to accept while adjusting transaction terms to their (the sellers') best interests. From this perspective, online markets where sellers may personalize contracts to the consumers' characteristics may place consumers in a remarkably vulnerable position without their awareness, presenting a particular danger to consumer protection rights.

Neither contract personalisation nor contract uniformity is, by itself, necessarily harmful or problematic for consumers, but neither is inherently beneficial either.

[12] Omri Ben-Shahar and Ariel Porat, Personalising Mandatory Rules in Contract Law [2019] University of Chicago Law Review 255.
[13] Gerhard Wagner and Horst Eidenmueller, Down by Algorithms? Siphoning Rents, Exploiting Biases and Shaping Preferences –Regulating The Dark Side of Personalised Transactions [2019] University of Chicago Law Review 581.
[14] See Michael D. Grubb, Overconfident Consumers in the Marketplace [2015] J Econ Perspectives 1; Xavier Gabaix and David Laibson, Shrouded Attributes, Consumer Myopia, and Information Suppression in Competitive Markets [2006] Q J Econ 505, 507–11; Stefano Della Vigna and Ulrike Malmendier, Contract Design and Self-Control: Theory and Evidence [2004] Q J Econ 353, 389.
[15] Jon Kleinberg, Jens Ludwig, Sendhil Mullainathan, and Cass R. Sunstein, Discrimination in the Age of Algorithms [2018] Journal of Legal Analysis 113.

Contract uniformity entails all consumers having a similar – if not the same – set of choices, contract terms, prices, and mandatory rules, regardless of their preferences and circumstances – including, of course, their willingness to pay.

Uniform contracts have the potential to generate a moral hazard problem because consumers face unformly designed transactions for uniform objects that they may value differently and this can generate cross-subsidies among consumers with distributional – regressive – effects.[16] Uniform consumer contracts have the same transaction design and allocation of transaction risk, and they pay the same for the contract object and for legal protection that they may value differently and may also exercise differently. When a contract provides a uniform set of rights across consumers who may value these rights differently, consumers with lower valuation subsidize the rights of the ones who value them most and who may exercise them most.[17] Given that the contract is uniform and its price is as well, those consumers who do not value some of the rights included in it will be paying a higher price for the contract than they otherwise would be paying if they could separate out the rights they do not value. This higher price they pay subsidizes those consumers who value these rights more.

In this uniform contract setting, consumers with lower income and lower willigness to pay – who tend to be less likely to exercise their consumer rights – subsidize the risk distribution and contract rights from the transaction to high income consumers, who pay the same but are more likely to exercise those rights under the contract and hence are not bearing the full cost of their rights under the contract.[18] This cross-subsidy generates extra contract costs for the low valuation group of consumers while lowering the cost of the contract for the high valuation group of consumers, who happily take the windfall.[19]

These cross-subsidies have distributive implicatons.[20] If the contract is uniform and its price is as well, consumers who value most the rights provided by the contract terms and hence expect to exercise them more are subsidised by those who value the rights

[16] See Omri Ben-Shahar and Ariel Porat, Personalising Mandatory Rules in Contract Law [2019] University of Chicago Law Review 255.

[17] Omri Ben-Shahar and Ariel Porat, Personalising Mandatory Rules in Contract Law [2019] University of Chicago Law Review 255

[18] The higher willingness to pay is positively correlated to the higher level of education or awareness of his rights and a higher likelihood of exercising those rights. Lower income consumers who may be likely to exercise their rights are subsidising the level of legal protection of high-income consumers who have the same contract and pay the same for the object but are more likely to exercise those rights: cf Omri Ben-Shahar and Ariel Porat, Personalising Mandatory Rules in Contract Law [2019] University of Chicago Law Review 255.

[19] At the extreme, consumers who would not be willing to pay the price of the uniform contract would leave the market. This would be true even if contract prices were different. Those consumers who would value contract rights less than their price would eventually decide not to enter into the contract so that only those who would value the uniform contract more than its cost would enter into the contract: cf Omri Ben-Shahar and Ariel Porat, Personalising Mandatory Rules in Contract Law [2019] University of Chicago Law Review 255.

[20] Omri Ben-Shahar and Ariel Porat, Personalising Mandatory Rules in Contract Law [2019]University of Chicago Law Review 255.

less and expect to exercise them less. Poor consumers pay for rights they may not exercise or may not care about and the result is regressive.[21]

From this perspective, both contract structures, uniform and personalised, present advantages, dangers and challenges for consmer welfare that will be presented in the next sections of this paper.

3 Contractual bundles, data sources and the dynamics of algorithmic personalisation

Among the key characteristics and distinctive elements of consumer transactions in digital markets are their contracting structure and decision-making dynamics. Consumer contracts in digital markets are structured in two stages that are different and functionally autonomous but factually closely related. When a consumer visits a website, enters a platform or a double-sided marketplace or downloads an application, the first thing they find is a request to access and collect – and eventually process – their personal data. This data may include, for example, browsing history, contacts, phone details, and geolocation data. The decision regarding which personal data to share – if any – is a previous, unavoidable and mandatory element to the transaction regarding the object or service the consumer is looking for. It Is also of essential importance for the consumer's present and future welfare. The personal setting of the privacy policies – through accepting, rejecting or modifying the personal data the consumer is willing to share – is a first filter that determines the present and possibly future status of the consumer in the digital market in which he or she intends to participate.

Once the privacy policy has been accepted, rejected or configured in a personalised way, the second element of contracting with consumers in digital markets is the configuration of the transaction that has as its object the exchange of goods or services – digital or not. The regulation of consumer protection in the European Union applies to transactions that take place in traditional markets as well as digital markets. Although structurally similar to the regulation of consumer contracts in non-digital markets, the regulation of consumer transactions in digital markets presents distinctive elements from the point of view of the pre-contractual information the consumer should have before entering into the contract, the design of the consumer contract, the nature and object of the digital contract, and the instruments and remedies available to the consumer in the event of breach.

Although formally distinct, legally and functionally autonomous, the two stages that shape consumer transactions in digital markets – privacy policies and consumer contracts defining the terms of the underlying transactions – are closely related. The

[21] *Ibidem.*

first, privacy policies, have a fundamental influence not only on the configuration of the design of the consumer transaction but also on the welfare the consumer may obtain from it.[22]

Personal data is the essential element for insights into the preferences of participants in digital markets, their purchases, their profiles and their expected future market decisions. This allows for the targeting of advertisement to consumers' preferences and suggesting them purchasing alternatives adjusted to their preferences, defining their choices, tailoring contract terms – including prices – to the consumer's ability to pay, personalising the object of the transaction to the consumer's preferences and ultimately adjusting contract remedies to the consumer's profile.

There are various different types and mechanisms of personalisation depending on the data used and the dynamic of the personalisation process. One type, called segmentation, involves contracts that are differentiated based on the set of static, stable descriptors or variables associated with a given consumer. The variables may be behavioral, as in the case of consumers' browsing histories, or their frequency of digital market participation and ways in which they use digital markets. They may also be demographic, including consumers' ages, genders and incomes; geographic, including consumers' geolocations, and psychological, including consumers' interests, values, and attitudes. All of these variables make it possible to segment consumers into groups that are expected to react differently to various values or to hold different market preferences.

Whereas the segmentation approach to personalisation leads to consumers being exposed to different market experiences based on the group in which they have been placed, other forms of personalisation go further and rely on personal and individual consumer profiles. Real-time personalisation, for example, uses AI to customize consumer experiences to individual characteristics and behavior at any given moment in time.

4 Beyond individuals' decision and control: multiple dimensions, different data sources and one single dataset

AI-driven digital platforms make it possible for firms to obtain, process and use massive amounts of data in ways that are extremely valuable for their market positions, targeting consumers, profiling them and designing transaction terms according to individual or group characteristics. This data is obtained through a variety of approaches. Some is obtained based on the consumer's consent given when visiting the

[22] Frederik Zuiderveen Borgesius and Joost Poort, Online Price Discrimination and EU Data Privacy Law [2017] J. Consum Policy 347.

platform itself or when visiting other websites or downloading applications. Some is obtained through the consent of other individuals or institutions that have sufficient connections to or similarities with the target consumer to make it possible to infer things like place of residence, family structure, and socioeconomic. Some of the data is purchased in data markets[23] and some is inferred by combining the target consumer's data and with aggregate personal data from other market participants.[24] Thus, any given dataset about a consumer can have multiple different origins with very important legal implications.[25]

The first approach for obtaining data about target consumers is to collact their personal data from them with their consent. This approach is governed by the European model of data protection,[26] which is structured around the European Data Protection Regulation and based on self-deterministic and private law principles. Through information transparency, the regulation assumes that individuals control and manage their own personal data and, thus, are able to protect their rights by giving or withholding consent.

The Data Protection Regulation requires that the data subject be given transparent information regarding access to and collection and processing of their data. The private autonomy of the individual is placed at the center through the process of consent. Individuals are assumed to control and manage their personal data by giving or withholding consent or by modifying or revoking consent to change the scope of access and processing of their data or to even delete it completely.[27]

The second major approach to obtaining data on given target consumers is to collect it from individuals or institutions related to these consumers. Here the existing regulatory model starts to have serious problems. The extreme case is the one in which

[23] For simplification, we will assume that this data available in data markets has been obtained legally and hence through the individual's consent regarding access and processing of this data.

[24] Inference data, as long as anonymous, falls outside the scope of application of the General Data Protection Regulation (GDPR), as established by Recital [26] that provides that "(...) *The principles of data protection should therefore not apply to anonymous information, namely information which does not relate to an identified or identifiable natural person or to personal data rendered anonymous in such a manner that the data subject is not or no longer identifiable. This Regulation does not therefore concern the processing of such anonymous information, including for statistical or research purposes.*" Anonymous data is not only that that does not allow identifying an individual but also that data that could not be used to single out or to identify a natural person directly or indirectly. So, as long as the data does not allow identifying or singling out –directly or indirectly – a data subject, such data falls outside the scope of application of the GDPR.

[25] Part of the data forming the consumer's dataset –the one allowing to identify the subject – is subject to the GDPR while anonymised data – such as inference data, for exemple – falls outside of the scope of application of the GDPR. See Jordan M. Blanke, «Protection for 'Inferences Drawn': A Comparison Between the General Data Protection Regulation and the California Consumer Privacy Act», (2020), 1, Global Privacy Law Review, Issue 2, pp. 81-92.

[26] The European model of data protection regulation is structured around the subject's consent. See Articles 4 and 6 of Regulation 2016/679 of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (hereinafter General Data Protection Regulation, GDPR), OJ L 119, 4.5.2015, p. 1-88.

[27] See Ryan Calo, Against Notice Skepticism in Privacy (and Elsewhere) [2013] Notre Dame L. Rev. 1027, 1047–59 arguing in favor of the model of data protection based on the subject's consent.

the target consumer has never surfed the internet but their spouse, children, friends and coworkers are on the internet and have shared information about themselves and about the target consumer. The data released on the internet by all of these people may include places of birth, countries of residence, ages, education levels, incomes, preferences, choices, tastes, and details about their professional lives, which, taken together, can enable firms to draw a remarkably accurate picture of the groups to which the target consumers belong. That is, the data companies use for targeting their consumers, influencing their choices as well as designing the terms of their transactions reach well beyond what these consumers themselves voluntarily release.

Having data on an individual's personal, professional, educational, social and financial context today is enough to draw an accurate profile of the individual or of a relevant group in which the individual may be placed. Note that such data and the potential group personalisation of the consumer it could be used for, would take place regardless of the individuals' own preferences about releasing their data or being characterised as part of a particular group of consumers. This dichotomy between the data that platforms and applications have regarding relevant individual traits and the individuals' decisions to release personal information have profound legal implications regarding the role of the individuals' consent and control of their personal data and the awareness of its use.

The possibility of individuals being profiled[28] as members of groups based on personal and contextual data challenges the basic element on which data protection rests in the European Union and the western world more generally: consent.[29] This data is obtained, processed and used without the target individuals' consent and yet the existing data protection framework does not appear to be triggered. Neither does it appear that contract law and private autonomy instruments commonly used for controlling private law relationships are sufficient to adequately regulate the access to this data, its use and its effects for the individual consumer. This problem will be developed in section 5.

The third approach to obtaining data on target consumers is to purchase it from data brokers.[30] These data brokers are companies in the business of obtaining and selling data -both primary and secondary data – in secondary markets.[31] Primary data is

[28] Article 4(4) of the GDPR defines 'profiling' as
"(...) *any form of automated processing of personal data consisting of the use of personal data to evaluate certain personal aspects relating to a natural person, in particular to analyse or predict aspects concerning that natural person's performance at work, economic situation, health, personal preferences, interests, reliability, behaviour, location or moviments.*"
[29] See articles 4 and 6 of the GDPR.
[30] Examples of databrokers are datacoup (https://datacoup.com) or acxiom (https://www.acxiom.com/).
[31] As an illustration, Joana Moll, an artist and researcher, was able to buy the online dating profiles of 1 million people for €136 from data broker USDate. The data she bought included the profiles of customed gathered from the online dating app Plenty of Fish, 5m photographs and details like their date of birth, zip code and gender as well as intimate

information collected specifically for the firms/platform/app purpose while secondary data is information – generally public – that has been collected by others such as for example, public administrations. This latter type is generally free or relatively cheap to obtain but the information obtained through its processing is remarkably valuable for market participants.

Ultimately, whatever approach is taken to obtaining consumers' data, this data is processed using machine learning and other forms of AI to make inferences.[32] The data obtained through the consumer's consent, the data collected through the consent of the individuals forming the consumer's personal, professional and institutional context and the personal data available in the market and obtained from data brokers all come together to form the dataset on which the AI operates to draw inferences about the consumer's personal characteristics, preferences, interests and market activity – all of which enhance the effectiveness of the consumer's personalisation of the market experience.

5 Types of personalisation; behavioral personalisation and "data-driven" personalisation

Machine learning and other forms of AI make it possible to tailor consumer's choices and to design and personalize transactions and the consumer contracts governing them. This personalisation is possible based on the collection of data from the sources described above and the inferrences about consumers' personal traits, preferences and characteristics that are drawn from this data.[33] Algorithmic personalisation reaches many different phases of consumers' participation in markets, including their choices, the standard terms included in their contracts, and the remedies they may be entitled to in case of a breach of contract.

There are two major types of personalisation mechanisms: behavioral personalisation and data-driven personalisation. Even though the data used to personalize may be based on the same dataset, the mechanisms – and legal implications – of the two types of algorithmic personalisation are remarkably different.

information like sexuality, religion, marital status and whether they smoke, drink or have children. After GDPR, Moll did not detect any change in the number of profiles (<https://www.ft.com/content/f1590694-fe68-11e8-aebf-99e208d3e521>) (last accessed 20 December 2021).

[32] As explained above, inference data, as long as anonymous, is not considered personal data and falls outside the scope of application of the GDPR. See recital [26] of the GDPR.

[33] See Katarzyna Poludniak-Gierz, Consequences of the use of personalisation algorithms in shaping an offer – A private law perspective [2019] Masaryk Univerity Journal of Law and Technology, arguing that personalisation may also create the perception of a relationship with the seller and hence give a "personal" content to the commercial transaction.

Behavioral personalisation[34] is based on the prior behavior of the consumer in digital markets. Behavioral personalisation does not define the personalised terms of the transaction based on inherent characteristics of the consumer like race, sex, income, or education, but on the consumer's activity and behavior in digital markets.[35] The data used in behavioral personalisation is the data obtained from the subject's consent as well as the subject's data obtained from data brokers.

Data-driven personalisation, in contrast, is based on the complete dataset obtained through all of the approaches discussed above. That is, data-driven personalisation uses the data obtained through the consumer's consent, along with data from individuals and institutions in the consumer's social and personal context, and data from databrokers, and it uses AI to infer new data points about the consumer. Using the comprehensive dataset, data-driven personalisation allows for accurately targeting consumers according to their preferences, designing contract terms – including price terms – according to their willingness to pay, adjusting the contract object to the consumer's preferences and ultimately being able to provide contract remedies adjusted to the consumer's preferences.[36]

A fundamental difference between the two mechanisms is that with behavioral personalisation consumers have some possibility of behaving strategically and hence misleading the algorithms learning from their activity. With data-driven personalisation, in contrast, strategic behavior by both sides of the transaction is not possible.[37] Instead, all of the power lies with the firm that controls the digital platform and the consumer's scope for reacting against data-driven personalisation is much narrower.

[34] Haggai Porat, Consumer Protection and Disclosure Rules in the Age of Algorithmic Behavior-Based Pricing [2020], available at <http://www.law.harvard.edu/programs/olin_center/Prizes/2020-1.pdf>, last accessed 31 March 2022.

[35] An example of the use – non-disclosed and not acknowledged – of behavioral personalisation is Amazon where the page display is customised to the visitor based on the personal data and metadata available about them to improve customer engagement trough personalising product and content recommendations as well as personalize marketing campaigns (amazon.com).

[36] See Katarzyna Południak-Gierz, Chapter 15 Personalisation of Consumer Contracts—Should We Personalize Interpretation Rules?, in Ana Mercedes Lopez Rodriguez, Michael D. Green, and Maria Lubomira Kubica (eds), *Legal Challenges in the New Digital Age* (Brill, 2021) noting that in light of consumer contract personalisation, rules of interpetation might have also to be personalised.

[37] On the dynamics and effects of strategic consumer behavior under behavioral personalisation – specifically price personalisation – see Haggai Porat, Consumer Protection and Disclosure Rules in the Age of Algorithmic Behavior-Based Pricing [2020], available at <http://www.law.harvard.edu/programs/olin_center/Prizes/2020-1.pdf> and Yuxin Chen and Zhong Zhang, Dynamic targeted pricing with strategic consumers [2009] International Journal of Industrial Organisation 43.

6 The legal anatomy of European consumer protection law in digital markets

As explained above, consumer transactions in digital markets involve a contractual bundle with two different dimensions: (1) data contracts – ToS and privacy agreements – and (2) consumer contracts governing the underlying transactions into which consumer enter. The second dimension may or may not be personalised.

The European regulation on consumer protection is structured around consumers and the contracts they enter in digital and non-digital markets. Its ultimate goal is ensuring consumers' sovereignty in markets so that consumers are in a position to take informed decisions based on their preferences. Consumer contracts and contractual remedies are the main instruments European consumer protection regulation provides to consumers in order to be able to seek redress either with respect to unfair contractual terms or with respect to a possible lack of conformity of the object of the consumer contract – through warranties or remedies for breach.

The literature has broadly discussed and shown that purely contractual remedies are highly ineffective in consumer contracts.[38] However, the vulnerability of consumers is even higher in algorithmic personalised contracts given that, in addition to the informational and bargaining imbalances inherent to consumer contracts, it is difficult – if not impossible – to assess the configuration, implications and effects of these personalised contracts for consumer welfare.

This section presents a general structure of European consumer protection regulation, the main characteristics of the European data protection regime and the main implications of the spillovers between privacy policies and personalised algorithmic contracts. Section 5 presents the inherent limitations of contractual instruments to ensure consumer protection in personalised algorithmic contracts.

7 Europen regulation of consumer protection

Consumers are at the core of European regulation on consumer protection. Consumer protection is closely linked to market regulation: both from the point of view of the general structure of the market – ensuring that it has the most competitive structure possible – and from the point of view of the obligations faced by the manufacturer prior to placing a product in the market or while it is on the market. From

[38] Yanis Bakos, Florencia Marotta-Wurgler and David R Trossen, Does Anyone Read the Fine Print? Consumer Attention to Standard-Form Contracts [2014] The Journal of Legal Studies 1

this perpective, prior to the introduction of a product in the market, the manufacturer must comply with the product safety regulations.[39]

While the product is in the market and prior to the transaction with the consumer, the manufacturer/seller must inform consumers[40] and notify the authorities of any risks the product may present.[41] At the same time, while the product is on the market the manufacturer/seller – before and after a possible transaction with a consumer – must take action if the risks presented by the product make it unsafe, including withdrawing it from the market when necessary.[42] Finally, the manufacturer (and in some cases also the seller) will be held civilly liable for damages caused to consumers/users by defective products placed in the market.[43] Although relevant for consumer protection, the analysis of European regulations on competition regulation, product safety and liability for damage caused by defective products is excluded from the analysis in this research paper.

As noted above, the main goal of European consumer protection regulation is to ensure, as much as possible, that consumers are in the position to take informed decisions according to their preferences in the transactions they enter into. An essential element of the consumer protection regime in Europe is therefore information. Consumers should have the necessary information to, in their exercise of their private autonomy, take decisions according to their preferences and form accurate expectations about the contract surplus they stand to obtain from a given transaction. Without transparent and truthful information, consumers are not able to take informed decisions about the risks, characteristics and price of the product in question. The emphasis on consumer information is placed both in the pre-contractual phase – through the regulation of commercial practices – and in the contractual phase in which the contract that regulates the transaction with the consumer materializes – through the control of the standard contract terms included in the contract.

[39] Directive 2005/95 of 3 December 2001 on General Product Safety, OJ L 11, 15.1.2—2, p. 4-17 provides for a general obligation on product safety but also includes an obligation to comply with the sectoral regulation applicable to the specific product. Before a product is introduced in the market suppliers must ensure that the products present a reasonable level of risk under the consumer's expectations and compatible with its use.

[40] Article 5.3 of Directive 2001/95.

[41] Article 5.3 of Directive 2001/95 establishes the obligation of monitoring and informing about the risks that eventually the products present. Product traceability is an essential element of the regulations, which through the European Union's Rapid Information Exchange System, "RAPEX", early warning system for dangerous – unsafe – non-food products, sellers must locate and eventually withdraw dangerous products from the market. Commission Implementing Decision (EU) 2019/417 of 8 November 2018 laying down guidelines for the management of the RAPEX, pursuant Article 12 of Directive 2001/95 / EC on general product safety and its notification system (notified under document number C (2018) 7334), OJ L 73, 15.3.2019, p. 121–187. Directive 2001/95 / EC of the European Parliament and of the Council of 3 December 2001 on general product safety (OJ L 11, 15.1.2002, pp. 4-17).

[42] Article 3.4 of Directive 2001/95.

[43] Directive 85/374/EEC of 25 July 1985 on the approximation of the laws, regulations and administrative provisions of the Member States concerning liability for defective products OJ L 210, 7.8.1985, p. 29–33.

At the pre-contractual level, the consumer's right to truthful and transparent information is regulated in a significant amount of Community legislation ranging from the regulation of misleading advertisement[44] to the regulation of unfair commercial practices.[45] The Unfair Commercial Practices Directive aims at protecting the economic interests of consumers before, during and after a business transaction. It regulates the practices – both actions and omissions – related to the promotion, sale, or supply of a product by a seller. The ultimate goal of the regulation of business practices is to provide a level and quality of information so that the average consumer does not take decisions based on misleading information that would not have been taken without the misleading information.[46] That is, the directive prohibits commercial practices – misleading,[47] and aggressive[48] – that could cause an average consumer to take decisions regarding a transaction he or she would have otherwise taken.[49]

The fundamental idea, widely explained in the economic literature, is that markets work when the decisions of their agents reflect their preferences regarding the design and dynamics of the transactions, as well as the purpose of the transactions. Business practices and the information provided to consumers clearly influence consumer decisions in the market, and the law seeks to prevent practices that manipulate consumers into taking decisions that depart from their prefereces.[50]

At the contractual level, consumer protection is articulated through the control of unfair standard contract terms in consumer contracts. The goal is that informed consumers can obtain the contract surplus they expect to obtain from the contracts they enter.

Consumer contracts are the central element of the European consumer protection regime. The objective of the pre-contractual phase is to ensure that the consumer is in a sovereign position to make informed decisions that reflect their preferences and expectations about the transaction. The second phase of consumer protection in the

[44] Directive 2006/114/EC of the European Parliament and of the Council of 12 December 2006 concerning misleading and comparative advertising *OJ L 376, 27.12.2006, p. 21–2.*

[45] 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 ('Unfair Commercial Practices Directive') *OJ L 149, 11.6.2005, p. 22–39.*

[46] Fernando Gomez Pomar, The Unfair Commercial Practices Directive: a Law and Economics perspective, *Indret,* 1/2006.

[47] Article 6 on misleading commercial practices and article 7 on misleading omissions of the Unfair commercial practices directive.

[48] Article 7 of the Directive on Unfair Commercial Practices.

[49] Fernando Gomez Pomar, The Unfair Commercial Practices Directive: a Law and Economics perspective, *Indret,* 1/2006.

[50] Directive 2011/83/EU of 25 October 2011 on consumer rights, amending Council Directive 93/13/EEC and Directive 1999/44/EC of the European Parliament and of the Council and repealing Council Directive 85/577/EEC and Directive 97/7/EC of the European Parliament and of the Council Text with EEA relevance
OJ L 304, 22.11.2011, p. 64–88.

marketplace focuses on controlling the structure and distribution of the contractual surplus between the professional seller[51] and the consumer in order to ensure that consumer expectations regarding the expected surplus from the transaction materialize.

The position of the parties in the design, structure and contract terms that allocate the contractual surplus generated by the transaction is clearly asymmetric. The contract is designed and structured by the professional, in a uniform, abstract and general way for infinite consumers with whom they eventually carry out transactions – without thinking of a specific consumer. The consumer contract contains general contracting conditions that are clauses not individually negotiated and that assign obligations to the parties of the contract, assign the risks inherent to the transaction and distribute surplus between the contractual parties.

The asymmetry in information, bargaining power and influence over contractual design as well as influence over decisions about the distribution of the contract surplus are the basis of the complex structure of controls of unfair standard contract terms.[52] The Directive on abusive clauses provides for a multilevel control structure of non-negotiated clauses in contracts with consumers: one control of formal transparency[53] and another of material or substantive transparency[54] – in order to ensure that the consumer, prior to the conclusion of the contract, is in a position to know the content of the contract and to form an adjusted expectation of the expected surplus.

In 2018/2019 the European legislature undertook a major reform of consumer protection[55] regulation to modernize it with respect to two different dimensions. The first was the need to standardize consumer contractual protection regardless of the nature of the object of the contract – with or without digital elements – and the face-to-face or virtual environment of the contract. The second was to modernize the rights of consumers in sales contracts, essentially represented by Directive 2019/771 on certain aspects of contracts for the sale of goods,[56] and by Directive 2019/2161 on the sale of

[51] See the judgment of the Court of Justice of the EU in *Kamenova* C-105/17, of October 4, 2018, where the CJEU established that the qualification of a contractual party as a profesional should be done on a case-by-case basis and in contrast to the position of consumers that have incomplete information and without capacity to negotiate the contract terms.

[52] Directive 93/13/EEC of 5 April 1993 on unfair terms in consumer contracts, *OJ L 95, 21.4.1993, p. 29–34* (hereinafter Unfair contract terms Directive).

[53] Article 3 of the Unfair contract terms Directive.

[54] Article 4.2 of the Unfair contract terms Directive. The Unfair Contract Terms Directive provides that the test of material transparency will be applicable to contract terms not defining the main subject matter of the contract. However, the Court of Justice of the European Union seems to have extended the scope of application of the material transarency test to all standard contract terms in consumer contracts, including those defining the main subject matter of the contract., See CJUE C-621/17, *Gyula Kiss, CIB Bank Zrt. v. Emil Kiss y Gyuláné Kiss*, of October 3, 2019. This idea was already present in CJUE C-348/14, *Maria Bucura v. SC Banpost SA*, of July 9, 2015.

[55] Most of the Directives adopted in the consumer protection reform of 2018-2019 will enter into force in 2022.

[56] Directive 2019/771 of 20 May 2019 on certain aspects concerning contracts for the sale of goods, amending Regulation (EU) 2017/2394 and Directive 2009/22/EC, and repealing Directive 1999/44/EC, *OJ L 136, 22.5.2019, p. 28–50*.

goods.[57] At the same time, the 2018/2019 reform on consumer protection also raised the focus of the role of the consumer in the market to go beyond the position of the consumer in the market and include a collective dimension of the consumer with a political agenda and social effects of preferences and decisions.[58] Consumers, as a group in the market, is the group in which the European legislator in some way trusts to successfully implement community policies on sustainability and the environment – the so-called New Deal.[59] Today it is still too early to anticipate the impact and possible success or failure of incorporating the collective dimension of the consumer into European regulations.

Directive 2019/771 does not overrule the regulation of the sale of goods established by Directive 1999/44 but regulates the aspects related to the conformity of goods sold,[60] the rights of consumers due to lack of conformity and the commercial warrantees on the objects of contracts. Directive 2019/771 fully harmonizes[61] some essential aspects of consumer sales while keeping the general regime in the hands of the member states.[62]

The modernisation of consumer protection regulation, the second objective of the 2018/2019 reform, has been articulated through the Directive 2019/2161, which has modified different directives on consumer protection[63] and pursues two major goals. First, the transformation and harmonisation of the sanctioning regime applicable to infringements of consumer protection regulations and, second, the strengthening of consumers' right of information, which translates into greater transparency duties for sellers or service providers before the transaction takes place. It also incorporates mechanisms to provide greater legal certainty, coherence and clarity in the consumer protection system.

With respect to the sanctioning regime established by Directive 2019/2161, the Directive requires Member States to guarantee dissuasive, effective and proportionate sanctioning frameworks.[64] To this end, the Directive establishes indicative and non-

[57] Directive 2019/2161 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, p. 7–28.*

[58] Michal Grochowski, «European Consumer Law after the New Deal: A Tryptich», (2020), *Yearbook of European Law*, Volume 39, p 387–422.

[59] Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee: A New Deal for Consumers (COM/2018/0183 final); hereinafter: 'New Deal'.

[60] Article 6 and 7 of Directive 2019/771 on ertain asepects concerning contracts for the sale of goods.

[61] Article 4 of Directive 2019/771 on ertain asepects concerning contracts for the sale of goods.

[62] Article 3.6 of Directive 2019/771 on ertain asepects concerning contracts for the sale of goods.

[63] Directive 2019/2161 modifies the following directives: Directive 93/13, of April 5, 1993, on unfair contract terms in consumer contracts, Directive 98/6, of February 16, 1998, on the protection of consumers in terms of indicating the prices of products offered to consumers, Directive 2005/29, of May 11, 2005, on unfair commercial practices of companies in their relationships with consumers and Directive 2011/83, of October 25, 2011, on consumer rights.

[64] The maximum saction should represent, at least, 4 % of the trader's annual turnover in the Member State or Member States concerned and in the event that it was not possible to determine said percentage, the maximum amount for the sanction should be equal to at least two million euros. Article 1 (4) and (5) of Directive 2019/2161 amending

exhaustive criteria to facilitate the uniform application of sanctions that may be imposed through administrative or judicial proceedings.

With respect to the right of transparency and information, Directive 2019/2161 updates and expands the obligations provided for in the Unfair Commercial Practices Directive, which considers deceptive those practices that substantially limit the information relevant to make an informed decision about a transaction for the average consumer.[65] Directive 2019/2161 broadens the scope of the concept of substantial information in relation to relevant elements of the transaction and requires that this information be provided by the seller and/or the digital platform; omission is considered a misleading practice.[66] Directive 2019/2161 imposes on digital platforms and sellers different information obligations, which it qualifies as substantive,[67] with respect to consumers in relation to different essential aspects of sales: (1) information regarding the legal status of sellers of products and services as well as of the distribution of obligations between the digital platform and the third party – whether the third party is a seller or not and the application or not of the rules on consumer protection,[68] (2) information regarding the criteria that determine the classification or positioning of the products or services in the results of online searches[69] and whether that search is provided by an external provider to the seller or it is a functionality that is provided directly by the seller,[70] (3) information regarding the eventually automated mechanisms of determination of the price[71] and (4) information regarding the mechanisms of valuation, review and creation of reputation on the digital platform. Failure to comply

Directive 93/13. It should be noted that the sanctioning regime is introduced in the amendments of all Directive amended by Directive 2019/2161 but it is not included in the Directive 2019/2161 itself.

[65] Or when this information is provided in an unclear, ambiguous, intelligible or in an inadequate moment. Article 7 of Directive 2005/29.

[66] New Annex I of Directive 2005/29.

[67] Article 7 of Directive 2005/29 estabishes that any commercial practice that omits substantial information, understood as that information necessary for the consumer to make an informed decision about the transaction, will be considered misleading. Directive 2019/2161 has expanded the information considered substantial, the omission of which will be considered a misleading practice.

[68] This obligation is established in a new article 6a of Directive 2011/83 in its section (d) that provides that

(d) where applicable, how the obligations related to the contract are shared between the third party offering the goods, services or digital content and the provider of the online marketplace, such information being without prejudice to any responsibility that the provider of the online marketplace or the third-party trader has in relation to the contract under other Union or national law.

The legal qualification of third parties is of fundamental importance for consumers because the consumer protection regime is only applicable in those contracts between business/professionals/traders and consumers.

[69] Preamble 20 of Directive 2019/2161. This obligation requires the modification of Annex I of Directive 2005/29. Online platforms must dislose the parameters that determine the classification of the results of online searches without being obliged to disclose the code or the mechanics of the algorithm that provides for those results.

[70] Article 3 of Directive 2019/2161 modifying article 7 of Directive 2005/29 on Unfair commercial practices and introducing a 4th section in the article.

[71] This obligation is consistent with the provisions of Article 22 of the General Data Protection Regulation (GDPR) that requires informing data subjects if the terms of the contract have been fully automatised. The underlying idea of this information is allowing consumers to know whether the terms – including the price terms – they are being offered are higher or lower than the other offered to others so that they can decide whether the term they have been offered is acceptable to them – in absolute and relative terms.

with the information obligations towards consumers constitutes an unfair commercial practice.

In sum, the European consumer protection regime places consumers at the center and consumer contracts at the core of the regime that influences the pre-contractual phase, controling the contract itself and providing remedies in case of breach. Algorithmic personalisation of consumer digital contracts introduces a new dimension through the use of personal data to influence the consumer's market experience globally. It occurs before entering into the contract, through the design and personalisation of contract terms, and ultimately through the personalisation of the contract object and the possible contract remedies. This is the subject of the next section.

8 Consumers' personal data as the feeding element of personalised contracts

Algorithmic consumer contracts are built with personal data. This is an important element that does not modify the contractual nature of the contracts with consumers themselves and the legal regime applicable to them but does affect the consumer's position in the contract, the design of the standard contract terms and ultimately the distribution of the contractual surplus between the contracting parties. The role of data brings potential for gains for consumers, but it also presents risks for consumers and market dynamics that warrant concern.[72]

European data regulation rests on transparency and consent, as provided by Regulation 2016/679.[73] Consumers have the right to decide whether they consent – opt in – to their data being accessed, collected, used and sold, as well as the right to know which data is collected. The Data Protection Regulation applies to the fully or partially automated processing of personal data, as well as to the non-automated processing of personal data contained or intended to be included in a file.[74] The definition of personal data is found in article 4.1 of the regulation and is articulated through four elements: (a) all information, (b) relative to (about), (c) a natural person, (d) identified or identifiable.[75]

Access to the personal data of the interested parties is of special importance both for platforms and for owners and managers of digital markets because this data provides the profile of the individuals who visit and use these platforms and markets. From this perspective, establishing the terms of acceptance of the privacy policy is a necessary

[72] Gerhard Wagner, Horst Eidenmueller, Down by Algorithms? Siphoning Rents, Exploiting Biases and Shaping Preferences – Regulating The Dark Side of Personalised Transactions [2019] University of Chicago Law Review 581.
[73] Regulation 2016/679 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation, hereinafter GDPR) [2018] *OJ L 119/1*.
[74] Articule 2.1 of the GDPR.
[75] Article 4.1 of the GDPR.

condition in order to enter into the consumer contract establishing the terms of the underlying transaction.[76]

Personal data, in many cases, is essential to carry out the transaction, especially when it is digital. The platform, digital application or seller in a double-sided market will need, for example, the name and surname of the buyer, the address of the buyer to deliver the product that is the object of the transaction and the details of the credit card with which the payment is made. However, most digital platforms, applications and double-sided market managers do not limit themselves to the data strictly necessary to carry out the transaction. Privacy policies generally include a level of data that makes it possible to draw a profile of the users' characteristics, preferences and tastes.

The processing of the personal data of the data subject makes it possible to know very precisely their profile in their digital activity in the double-sided markets or in the platforms in which they participate. This knowledge has a very relevant economic value both for sellers and for market managers. Knowing the preferences, tastes and decisions of individuals through their digital activity allows them to personalize information, make purchase suggestions, display products in optimal ways, and ultimately tailor the contracts that digital consumers accept. In short, through artificial intelligence, the processing of personal data of individuals – interested parties – allows them to personalize the informational, commercial, advertising and contractual experience of the consumer in digital markets as well as to influence and anticipate their future informational and commercial activity in those markets.

The personalisation that the consumer's experience in digital markets – through personalised advertising, pre-contractual information adjusted to the characteristics of the consumer and the contract that regulates the terms of the transaction, among others – is in itself neither negative nor positive for the consumer. However, the informational asymmetry between the contractual parties in digital environments places, as will be explained later, the consumer in a position of special vulnerability to ensure a level of well-being in digital transactions at least equivalent to that which he or she would obtain in traditional transactions. In addition, consent, a fundamental element that allows access to and processing of personal data of consumers, is not the appropriate instrument to balance the position of consumers and react to a possible violation of their privacy.

Consumers' data rights, their exercise and their effectiveness have been broadly discussed in the literature.[77] EU law promotes transparency by mandating the disclosure of the consumer data being collected – through cookies, fingerprinting or

[76] Article 6(1)(b) of the GDPR.

[77] Sandra Wachter, Brent Mittelstadt, A Right to Reasonable Inferences: Re-Thinking Data Protection Law in the Age of Big Data and AI [2019] Columbia Business Law Review 2 and Frederik Zuiderveen Borgesius, Joost Poort, Online Price Discrimination and EU Data Privacy Law [2017] J Consum Policy 347.

Internet Service Providers' monitoring – and of the use eventually given to this data.[78] However, evidence suggests that information transparency is not equivalent to knowledge or control, and this weakens the effectiveness of the data protection regime.

9 The relevance of contract spillovers in personalised algorithmic contracts

Algorithmic personalisation has an impact on two major contractual phases: before the transaction takes place and how the transaction is contractually designed. Before the consumer enters into the contract, personalisation allows traders and sellers to target individuals and offer them products and services that may better adjust to their preferences. In this sense traders and sellers are in a position to influence the consumer's welfare, which simultaneously increases the likelihood that the transaction takes place. The influence on consumers' preferences and choices results in narrowing market choices to best fit consumer preferences so that it is more likely that the transaction will take place to the benefit of both contracting parties. From this perspective personalisation would be socially beneficial given that it would allow for generating contract surpluses that might not take place without such personalisation.[79]

At the contractual level, algorithmic personalisation allows traders and sellers to offer contract terms that are specially tailored to individual consumers and hence are more acceptable to them at lower transaction costs. Sellers/traders may be able to adjust the consumers' choices to the data and information available about them in a way that transaction costs decrease. In this sense, personalisation would allow the consumer to obtain a higher surplus from the contract while enhancing the aggregate surplus created by the transaction at the market level.

The potential positive aspects of contract personalisation on consumer welfare are contingent on different variables such as whether consumers have pre-contractual information on personalisation, the market structure – whether the market is perfectly competitive or not – and whether it is possible to segment consumers.[80] Ultimately, if traders or sellers compete and are able to charge consumers a price reflecting the cost of the personalised legal protection they are afforded and consumers are aware of that, the outcome not only would be efficient but also optimal. Under these assumptions consumers would be charged a different price but this price would reflect the cost of the legal protection they are afforded. From this perspective, the transaction structure

[78] See Ignacio Cofone, Adriana Z. Robertson, Consumer Privacy in a Behavioral World [2018] Hastings L.J. 1471, 1475, 1489–1490 and Ignacio Cofone, Beyond Data Ownership, [2021] Cardozo Law Review (in press).
[79] From a purely welfarist perspective, this would be socially positive.
[80] Omri Ben-Shahar, Ariel Porat, Personalising Mandatory Rules in Contract Law [2019] University of Chicago Law Review 255.

enabled in this context would involve different costs according to their individual preferences and hence different prices reflecting the marginal costs of their legal protection.

Consequently, if contract personalisation was complete and perfect, transaction costs would be different and adjusted to the consumer's preferences and prices would reflect the heterogeneous structure of costs – from the seller and from the buyer. The contract surplus would be efficient and the outcome would be Pareto optimal given that each party in the contract – sellers/traders as well as consumers – would achieve its maximum contract surplus under the contract. Further, there would be no deadweight loss, no cross-subsidy between consumers would take place and the incentives to contract would be optimal.

Reality, however, does not function so efficiently. Algorithmic contract personalisation also throws important shadows.

Algorithmic contract personalisation raises concerns that are a mirror image of its potential welfare enhancing effects. Algorithmic personalisation is possible because of the enormous amounts of data sellers/traders collect, enabling them to adjust choices and contract terms to the consumer's preferences.

In general terms, personalisation can result in losses for those consumers who received a cross-subsidy from other consumers under uniform contracts. That is, those consumers that enjoy uniform contract terms and contract prices but are willing to pay higher prices for the protection afforded because they are more inclined to using them end up seeing their contract prices to go up because personalisation involves a correspondence between contract prices and the level of legal protection afforded. Other consumers see their contract prices reduced under personalised contracts because they now only pay for the level of legal protection they decide to purchase.

Despite the welfare enhancing potential of personalisation, it raises concerns regarding manipulation of consumer preferences, exploitation of consumer behavioral biases and eventual transfers of the consumer surplus to the seller/trader.[81] This may end up limiting consumers to a narrower set of choices, engaging in welfare-reducing transactions and ultimately accepting surplus losses in personalised transactions.

At the pre-contractual stage, the data available to sellers/traders enables them to target ads and recommendations in order to shape consumers' preferences so that ultimately they enter into transactions they would not have entered into had this targeted influence not taken place.

The data available to sellers/traders also positions them to exploit behavioral biases that prevent consumers from correctly assessing expected costs arising from

[81] G Wagner, HGM Eidenmueller, Down by Algorithms? Siphoning Rents, Exploiting Biases and Shaping Preferences – Regulating The Dark Side of Personalised Transactions [2018] University of Chicago Law Review 581.

transactions and hence the surpluses they can expect to obtain from them.[82] This is particularly acute in complex transactions, but cognitive limitations and behavioral biases are present well beyond complex structures.

At the extreme, algorithmic personalisation can result in first degree price discrimination – or perfect discrimination – broadly studied in economics.[83] First degree price discrimination generates efficient outcomes from the perspective of the surplus generated by the contract and hence from the market. However, it raises equity concerns given that it can enable one of the contracting parties, in this case, the perfectly discriminatory seller, to keep the entire surplus generated by the contract and hence from the market. If sellers know or can infer consumers' reservation prices, personalisation can lead consumers to accept the terms of the transaction without obtaining any surplus from it. Under this structure, consumers end up happy with the contract terms of the perfectly personalised contract but poorer because they do not obtain any surplus from the transaction. In this case, despite of the optimally efficient outcome obtained, consumer protection would be under threat.

10 The inherent limitations of contract law in protecting consumers in algorithmic personalised contracts

AI presents two different but closely connected dimensions in consumer transactions: (1) an intrinsic dimension regarding algorithm design and its responses in consumers' choices and personalised transactions, and (2) a relational dimension regarding the impact on consumer welfare of personalised market choices, transaction design and remedies for breach. With respect to the intrinsic dimension, the EU approach to AI is based on the principles of transparency and explainability of algorithms.[84] With respect to the relational dimension, literature has focused on the economic effects of personalisation for consumers[85] and the legal implications of automatisation for consumers' sovereignty in market transactions, recommending protection because of their weaker informational, bargaining and contracting position in B2C transactions while ensuring they are able to take market choices and shape the

[82] See Michael D. Grubb, Overconfident Consumers in the Marketplace [2015] J Econ Perspectives 9, 12–13; Xavier Gabaix, David Laibson, Shrouded Attributes, Consumer Myopia, and Information Suppression in Competitive Markets [2006] Q J Econ 505, 507–11; Stefano Della Vigna and Ulrike Malmendier, Contract Design and Self-Control: Theory and Evidence [2004] Q J Econ 353, 389.
[83] Hal Varian, *Intermediate microeconomics: A modern approach* (W.W. Norton & Co, 2010) and Benjamin Shiller et al., First degree price discrimination using big data [2013] Brandeis Univ., Department of Economics.
[84] See Directive 2019/2161.
[85] Omri Ben-Shahar, Ariel Porat, Personalising Mandatory Rules in Contract Law [2019] University of Chicago Law Review 255 and Townley Ch. et al., Big Data and Personalised Price Discrimination in EU Competition Law [2017] Yearb. Eur. Law 683.

transactions they enter into according to their preferences.[86] Literature has also focused on the limitations of the current EU instruments – pre-contractual information duties, contractual transparency control and ex post remedies for breach – for protecting consumers in automated, and ultimately personalised, transactions.[87]

The European model relies heavily on private law instruments to protect private autonomy in digital and non-digital markets. Consumer contracts are the main instrument that European law provides to consumers in order to ensure their rights are complied with and seek redress in case their rights are violated.

Contract law, though, when used in asymmetric contexts like contractual relationships between professionals and consumers, is not effective. Further, when personal data is involved as an element shaping and defining the terms of the contract between the professional and the consumer, the effectiveness of contract instruments is even lower. Contract law does not appear sufficient to ensure that the the expected welfare consumers obtain from non-digital non-personalised contracts is equivalent to that obtained in the digital personalised realm.

11 The limitations of contract law in consumer contracts

Consumer contracts are inherently asymmetric[88] from the perspective of the information between the contracting parties as well as from the perspective of their negotiation capacity. For that reason, different legal systems adopt different mechanisms to balance, as much as possible, the position of the contracting parties in the contract. Four of them, used in European consumer law, will be presented here: mandated disclosures, default rules, contract controls, and remedies for breach – warranties. However, all of these mechanisms appear clearly ineffective, for different reasons, in protecting consumers' private autonomy and placing them in a position symmetric to that of the professional.

Mandated disclosures aim at providing a minimum requirement of information that must be given to consumers on relevant characteristics/features of the contract content and the contract object so that they can accurately assess the expected contract surplus generated by the transation. Mandated disclosures, even if well intentioned, present major challenges. The first is the fact that consumers often do not understand or even read the contracts they are faced with.[89] The second is that horizontal mandated

[86] Oren Bar-Gill, Price Discrimination with consumer misperception [2020] Applied Economics Letters, Harvard Law School John M. Olin Center Discussion Paper No. 1033.
[87] Oren Bar-Gil, Omri Ben-Shahar, Regulatory Techniques in Consumer Protection: A Critique of European Consumer Contract Law [2013] CMLR 109.
[88] Katarzyna Poludniak-Gierz, Consequences of the use of personalisation algorithms in shaping an offer – A private law perspective [2019] Masaryk Univerity Journalof Law and Technology.
[89] Yanis Bakos, Florencia Marotta-Wurgler, David R. Trossen, Does Anyone Read the Fine Print? Consumer Attention to Standard-Form Contracts [2014] The Journal of Legal Studies 1, showing that in a simple of 65000 consumers, one out

disclosures may result in misleading consumers instead of enhancing their information. If disclosures are not justified and do not accuretely reflect the transaction risks, they can result in false inferences and hence a disruption on consumers' decisions.[90]

Default mandatory rules in contract law are meant to protect consumers from unfavorable contact terms that may be present to the contract. Because of the asymmetric position of the contracting parties, contract drafters – the professionals – are in a position to introduce contract terms that are most favorable to themselves. [91] Mandatory rules intend to balance the consumer's position through introducing non-waiveable rights. The idea is that consumers are afforded a minimum contract quality that cannot be diluted through negotiation. From this perspective, mandatory rules are positive for consumers. European consumer law uses extensively mandatory rules as a mechanism of consumer protection, such as withdrawal rights or remedies for lack of conformity – warranties. However, mandatory rules also present some risks because of their unintended effects, such as raising prices, shrinking markets,[92] or generating cross-subsidies between consumers with deep regressive effects.[93]

Contract controls and warranties are two instruments used in European consumer protection. As explained earlier, contract controls of standard contract terms – formal and substantive transparency controls – set up by the Directive 93/13 aim at ensuring that contract terms provide a minimum quality of contract terms. Transparency controls have been presented in section 4 above so will not be presented here. Warranties, on the other hand, regulated by Directive 2019/771,[94] aim at ensuring that the product object of the transaction complies with the general characteristics of the product type. These are two instruments, widely used in European consumer law, that aim at providing certainty to consumers regarding features and qualities of the contract object.

These mechanisms are necessary because consumers, for the most part, do not understand or read the contracts they are faced with. It is widely accepted that private autonomy and pure freedom of contract is not possible in the context of consumer

of 1000 consumers actually read the terms of use in online software contracts. The fact that hardly anyone reads online contracts allows Bakos and Marotta to conclude that drafters – sellers are in a very powerful position when drafting consumer contracts.

[90] Oren Bar-Gill, David Schkade and Cass R. Sunstein, Drawing False Inferences from Mandated Disclosures [2017] Harvard Public Law Working Paper No. 17-06 (available at <https://ssrn.com/abstract=2914354>, last accessed 31 March 2022) claiming that mandated disclosures should be justified in real evidence because if not they would send distorted messages to consumers and hence disrupt their decisions in markets.

[91] Omri Ben-Shahar and Ariel Porat, Personalising Mandatory Rules in Contract Law [2019] University of Chicago Law Review 255.

[92] *Ibidem*.

[93] Antonio Karampatzos, *Private law, nudging and behavioral economic analysis: the mandated-choice model* (Routledge, 2020).

[94] See articles 5, 6 and 7 of Directive 2019/771.

contracts. When the role of personal data is introduced, these contract dynamics that generate important asymmetries are exacerbated.

The limitations resulting from contracts are also exacerbated by the role of data in algorithmic personalised contracts, which places consumers in an even more vulnerable position than the one they occupy in consumer contracts generally.

12 The statistic and dynamic elements of consent in privacy policies and consumer's vulnerability in algorithmic contracts

The European Data Protection Regulation aims at providing individuals with control and management of their personal data through consent. If this control actually existed, consumers – data subjects – would be able to assess the role and effects of their data in the design and content of the personalised contracts they are offered. That is, if the transparency and control model of personal data would allow consumers to control their data they would know which data they have agreed to share and process, which data has been used to design the contract they are offered and what are the effects of this data for the distribution of the contractual surplus between the seller and the consumer compared to an alternative – eventually a non-personalised contract.

None of this appears to be the case in digital markets. This weakens the position of consumers because they remain blind to the role of their personal data in the design and in the content of the personalised contracts they are offered.

Privacy policies have a very similar structure to contracts. However, the European Data Protection regime is not configured for contracts between an interested party – eventually a consumer – and a professional with the object of personal data. The understanding that privacy is a fundamental right makes it impossible for it to be the object or consideration of a contract. Consenting to share and process the subject's personal data, therefore, cannot, at least as of today, constitute a necessary and limiting consideration for accessing pages, platforms or digital double-sided markets. [95]

Data has a static and a dynamic dimension and consent, the basic element of the European data protection regulation, might be adequate for the static dimension but it is clearly inadequate for the dynamic one. The static – and individual – dimension is manifested through the consent given for access to personal data.

[95] See Thomas B. Norton, The Non-Contractual Nature of Privacy Policies and a New Critique of the Notice and Choice Privacy Protection Model [2016] Fordham Intell. Prop. Media & Ent. L.J. 181). The consideration of privacy policies as contracts is now pending before the CJEU in the case C 446/21 Schrems v. Facebook Ireland Ltd. Filed by the Austrian Supreme Court on July 20, 2021. It should be noted, though, that article 6(1)(b) of the GDPR provides that acceptance of the mandatory terms of the privacy policy and the definition of the of the non-mandatory terms to be accepted or rejected is a necessary condition in order to enter into the subsequent consumer contract for the underlying transaction.

However, the processing of personal data is of an eminently dynamic and collective nature. The content of this consent and its effects are radically different for the individual. The nature of data processing or portability is dynamic. The dynamic element of the processing of personal data has to do with the temporal dichotomy between the time of consent to the processing of personal data and the time when the effects of such processing are experienced. At the moment when individuals consent to the processing of their personal data – in whole or in part – they consent to a treatment or portability of this data that, through AI, will result in future effects. Thus, at the time of consent, consumers are unaware of the possible uses and impacts that the processing of their data may have for their profile and position in transactions in digital markets, and particularly for their well-being in future transactions in digital markets.[96]

Data processing also has a collective dimension.[97] Personal data is combined with the data of other individuals to provide new information and inferences about the data subject. It is not possible for data subjects to know at the time of giving consent what are the probable results of such data combination and therefore what information may eventually be obtained about them through this combined processing with data from other individuals.[98]

Consequently, the nature of personal data and its different dimensions make it effectively impossible for individuals to assess, evaluate and determine the role and effects of the use of data in their algorithmic contracts. It is not possible for consumers to know what personal data is available from them, what role of this data plays in the personalised contract offered to them, and most importantly, what are the effects the use of this data has on the surplus they might obtain from the transaction compared to possible alternatives.

Contract law cannot provide remedies for this situation given that the lack of awareness, quantification, counter-factuals available to assess the harm eventually inflicted[99] to the consumer's interest make it impossible for consumers to seek redress. The black box generated by data in algorithmic personalised contracts generates risks for consumers that challenges the effectiveness of consumer protection regulation in digital markets.

[96] See Elena Gil González, Paul de Hert, Understanding The Legal Provisions That Allow Processing and Profiling of Personal Data—An Analysis Of GDPR Provisions And Principles [2019] ERA F. 597, 600 claiming that consent of the data subject could be a valid instrument as long as it was provided freely, genuintly and in an informed way and considering that consent of privacy policies does not present these elements.

[97] See Ignacio Cofone, Adriana Z. Robertson, Consumer Privacy in a Behavioral World [2018] Hastings L.J. 1471, 1475, 1489–1490.

[98] Michèle Finck, The Limits of the GDPR in the Personalisation Context, in U. Kohl, J. Eisler (eds), *Data-driven Personalisation in Markets, Politics and Law* (Cambridge University Press, 2021).

[99] Sandra Wachter, Brent Mittelstadt, Chris Russell , Counterfactual explanations without opening the black box: automated decisions and the GDPR [2018] Harvard Journal of Law & Technology.

13 Conclusion

As of today, European regulation of consumer transactions in digital markets addresses in a segmented way the different phases of the consumer's contractual path and the different dimensions of digital consumer contracts. From the perspective of the contractual path of digital consumer contracts, the European regulation focuses on ensuring consumers' sovereignty by regulating ex ante contractual commercial practices and pre-contractual information duties, controlling standard contract terms in consumer contracts and providing ex post contractual remedies for lack of compliance with contract terms. Further, the regulation focuses in one specific dimension of the consumer transaction at a time: either privacy policies or consumer contracts regulating the transaction.

The interaction, effects, and impact of consumers' personal data and therefore their privacy is a disruptive element that distorts the positions of professionals and consumers in digital markets and especially in transactions. It is essential to observe, study and analyze the conditions in which contractual customisation can provide greater well-being for the consumer and, above all, analyze the conditions in which the consumer's expected contractual surplus may end up being reduced or even eliminated.

This segmented approach presents major limitations when addressing algorithmic transactions that are ultimately personalised using data previously obtained to drive machine learning and other AI approaches to tailoring choices and designing consumer contracts. In this setting, focusing on the consumer's opt-in consent largely misses the heart of the issue. Without considering consumers' previous choices – in particular in privacy policies – it is not possible to effectively apply ex post transparency controls over standard contract terms or determine whether terms should be treated as unfair.

In light of all of this, it is of utmost importance to adopt a global and comprehensive approach to the different contract phases and to reach beyond contract law to protect consumers' private autonomy and expectations in algorithmic personalised contracts. The approaches adopted to date do not protect consumer welfare and they call into question the overall effectiveness of the European consumer protection regime when it comes to algorithmic personalised consumer contracts.