

Privacy, regulations and the value of personal data

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Abstract:

Personal data have an important place in the strategic positioning of Internet firms so as to better target consumers. When these data are combined with other data (from public administrations, for example), processing them can be a matchless source of added value for firms. The new strategies for extracting value from personal data warrant the adoption of appropriate regulations for this market. After identifying the sources of value related to the processing of personal data, this article draws on the academic literature in economics and marketing to shed light both on the strategies eventually adopted by firms for endowing personal data with an economic value and on the new business models that result. Questions are asked about how regulations will protect the privacy of individuals while letting untouched the ability of firms to innovate.

Increasing digitization of the economy has augmented the economic functions of personal data, since enormous quantities of data can now be collected, stocked and processed at ever lower costs.¹ Processing personal data enables firms to make better offers to users by reducing the costs of searches, but it can also be at the origin of prejudicial acts of discrimination or of unwanted, inappropriate advertisements directed at these same users (ACQUISTI *et al.* 2016). This secondary use of personal data can occur without users being aware of it. From an economic viewpoint, this processing of personal data is linked to the fact that this information is a nonrivalrous and nonexcludable good (CECERE *et al.* 2017).

The academic literature on the economics of privacy has focused on the relation between the disclosure of individuals' personal data and the strategies of innovation adopted by the firms that use these data. The omnipresence of the Internet, including the Internet of thing (IoT), has augmented the importance of data in all sectors, especially in advertising and on e-business websites and on-line platforms (LAMBRECHT *et al.* 2014). Academic studies in economics and marketing have recently started: showing interest in the behaviors of individuals in various contexts (ACQUISTI *et al.* 2012), studying the effectiveness of targeted advertising for firms (LAMBRECHT & TUCKER 2013), and assessing the impact of regulations on protecting privacy (CAMPBELL *et al.* 2015 & TUCKER 2014).

¹ This article has been translated from French by Noal Mellott (Omaha Beach, France). The translation into English has, with the editor's approval, completed a few bibliographical references.

What is the value of personal data?

Internet firms are ever more effectively targeting users thanks to an ever finer processing of their personal data. Although the value of the personal data generated by firms is continually increasing, measuring or estimating it is still hard to do. Economic studies on the choices and compromises made by individuals and firms open a point of entry into the problem area of value.

Individuals decide to share their data with on-line platforms in order to have access to customized services, often for free (ACQUISTI 2010). Visits to a platform often helps improve this customization: users thus benefit from externalities related to the disclosure of data by other users. For example, by making (positive or negative) recommendations of products that they know, website users reveal their preferences, and this information can benefit other users who thus have access to this information, either directly or in an aggregated form. This sort of disclosure is not, however, the only way that firms collect personal data. They can also tap the data on browsing or geolocation to obtain a profile of their customers (KOSINSKI *et al.* 2013). In this case, the data collected are diverse but directly personal (such as age, address, sex, or preferences revealed via the social media, purchases or posted comments). These data generate even more value when combined with big databases (LAMBRECHT & TUCKER 2017, THE ECONOMIST 2010).

As for firms, the academic literature has mainly focused on how firms in industry or marketing have put personal data to use and how these uses create or stimulate new business models and thus boost innovation. The formation of enormous databases, the analysis of their data and the advances made in marketing are the conditions for an every more granular processing of their data (ACQUISTI 2014). The value of data depends, therefore, on how firms incorporate them in their business models.

Economic theories rely heavily on the hypotheses that agents (individuals and firms) set a price for data and that the quantity and quality of the data are factors affecting corporate strategies. These theoretical models have emphasized how much corporate strategies and business models depend on users disclosing personal data and, therefore, on the consumer's preferences with regard to privacy. In general, these theoretical approaches have assumed that cybernauts accept the Internet business model of services for free in exchange for their personal data. Fudenberg and Tirole (1998) have shown how a monopoly selling durable goods adopts different strategies depending on the type of consumers (anonymous, semi-anonymous or identified).

To the best of our knowledge however, few empirical studies have tried to assess the actual value of personal data for firms, even though the latter clearly set store by these data. However an OECD report (2013) has suggested detailed methods for evaluating personal data and proposed a view of the firms operating in this market, including the Internet firms that have direct contacts with users and, too, the third-party firms that exchange and process data. Focusing on the value of personal data on the data brokerage market, this report has shown that their value is related to the quality and volume of the data collected.

How do firms use data?

For Acquisti *et al.* (2016), three markets related to personal data coexist: 1) a market where firms propose services to users in exchange for personal data; 2) a market where individuals pay to protect their privacy; and 3) a market of data brokers (third-party companies) where firms collect data and use them commercially in business-to-business (B2B) transactions.

On the primary market of Internet firms and their customers, personal data are used to design more effective advertising campaigns and to set prices close to what individuals are willing to pay. For most online firms, advertising is a major source of income (MARTIN & MURPHY 2016). The use of browsing data and algorithms provides detailed information about how individuals interact with websites and advertising. It also becomes a factor accelerating the pace of innovation. Varian (1997) has pointed to a twofold use of personal data by Internet firms: the one facilitates the interactions of firms with their customers whereas the other implies a transmission of these data to third-party firms that are better equipped to process them. The processing of personal data can be used to set prices (at the first or, more realistically, the third degree of price discrimination), since it detects the individual's reserve price. From this perspective, the relation between company strategies and personal data (and thus privacy) is important (TAYLOR 2004). By adding to this hypothesis a positive effect in terms of price discrimination for users, a recent theoretical study (BELLEFLAMME & VERGOTE 2016) has suggested that the use of technology to dissimulate personal information might reduce the "consumer's surplus".

Besides price discrimination, other forms of prejudicial discrimination might also exist, whence questions about how personal data are used and how these uses affect consumer confidence. According to recent studies on the labor market, recruiters can discriminate between job postulants by using information garnered from the social media (ACQUISTI & FONG 2015, MANANT *et al.* 2017). Furthermore, the algorithms used by the social media, when they rely on biased databases, reproduce discrimination on line (LAMBRECHT & TUCKER 2018). In general, the academic literature emphasizes how firms tap the personal information that uses "leave" on line.

On the secondary market comprised of Internet and third-party firms, personal data are processed on the scale of this market, as these third-party companies buy personal data (*e.g.*, the many marketing firms, such as BlueKai and Avarto, specialized in data management). This secondary use of personal data occurs when the data are transmitted to data brokers, data aggregators, advertisers or, more broadly, firms with the skills for processing them (AKÇURA & SRINIVASAN 2005). The secondary use of personal data (whether by third parties or within a single firm) seems less legitimate when the data are transmitted or used without the user's knowledge.

What is the value of data for regulatory authorities?

The emergence of new firms with business models based on the processing of personal data has attracted the attention of regulatory authorities to the need to find a fair balance between the protection of privacy and data-sharing for the purpose of stimulating innovation and improving services (TUCKER 2012). It is, therefore, necessary to identify the source of the value of data in order to assess the impact of regulations on corporate strategies.

Nonetheless, public interventions on questions of privacy are complex. First of all, it is hard to innovate in business where personal data play a key role, and competition between firms is stiff. Secondly, drawing up regulations for protecting the privacy of individuals might influence not only the choices made by the protected themselves (MARTHEWS & TUCKER 2017) but also the decisions made by firms (MILLER & TUCKER 2009). An examination of the tools used by regulatory authorities helps us understand how regulations with regard to privacy can have an impact on market operations.

In the United States, where the Federal Trade Commission (FTC) is the regulatory authority, self-regulation prevails. The guiding principle is to stimulate competition around the issue of privacy while taking account of market shortcomings (CECERE & ROCHELANDET 2012). This approach, which envisions the two sides of the market, supposes that consumers can decide to keep their preferences private and that firms comply with the principles of accountability and control in matters of privacy (for example by providing a detailed account about how data are collected). Accordingly, privacy policies, often in the form of codes or charters, call for notification and consent with the implication that individuals are supposed to read the policies and decide whether or not to give their consent to service conditions (CRANOR 2012). In this regulatory framework, privacy policies must provide sufficient information to individuals about how a firm collects, uses and shares personal data and makes them secure (MAROTTA-WURGLER 2016). However the empirical evidence shows that the service conditions are too long to read and too complicated for nonspecialists (MCDONALD & CRANOR 2008). The FTC has favored the creation of online certification services by private third parties (such as TRUSTe and BBB with their privacy seals and labels) that help reduce the user's cognitive efforts for assessing risks. However these services raise the problem of adverse selection. As empirical studies have shown, the websites certified by TRUSTe are more than twice as likely to be deemed not worthy of trust than uncertified sites (EDELMAN 2011). These findings suggest the need for regulatory interventions to ensure the quality of these private seals and labels.

In Europe, regulatory authorities have turned more toward establishing a general framework for protecting consumer privacy in all sectors — a significant difference from the American approach, which heavily relies on self-regulation. The intent is to limit the effects of adverse selection by providing a robust framework for protecting personal data with which firms must comply. The EU's General Data Protection Regulation (GDPR), in effect as of 25 May 2018, requires that firms ask consumers for their consent to use their data.² It also enables individuals to have access to more information about how firms will handle their data. It reinforces the right of individuals to be forgotten; in other words, a user may ask the holders of his/her data to have them deleted or modified. The GDPR is a boost to privacy-by-design, since questions related to privacy must be taken into account from the very start and then throughout the process of developing goods or services. Adopted in 2016, this regulation replaces previous EU legislation (directives 95/46/CE on data protection and 2002/58/CE on privacy and electronic communications). Globally, the EU approach is intended to provide more transparency and protection to people than the American one, but it will also probably represent a higher cost for the firms that comply with it, since strong requirements are made of them.

Regulations regarding privacy, though directed at consumers and firms, might also have indirect consequences on market structures. In general, neither the trend nor size of this impact is clear. Regulations establish a legal framework for corporate activities, but it is necessary to understand the overall function of personal data in markets. For this reason, this article has concentrated on the principles guiding privacy regulations, on the theoretical arguments and empirical evidence related to the market impact of regulations and, too, on how technology and the breaches of personal data might affect markets.

² General Data Protection Regulation: "Regulation (EU) 2016/679 of the European Parliament and of the Council 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". Available via: <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1478961410763&uri=CELEX:32016R0679>.

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