

## Issues Paper on Digital Ecosystems, Big Data and Algorithms

### *Executive Summary*

**The digitalization of the economy led to the emergence of new business models, based on multi-sided platforms**, which have significantly shaped consumers' behaviour. In 2018, 94% of Portuguese internet users have made a least one online purchase within a wide range of product categories (Nielsen, 2018).

**Multi-sided platforms are characterised by the large volume and diversity of data they collect about their users (big data) and strong network effects** (*i.e.*, the effect that a user of a product/service has on the value of the product/service for other users). Platforms can be integrated in digital ecosystems that supply a wide range of products and services, many of which not requiring a monetary payment. These ecosystems aim at capturing users and attention, so as to direct them to monetised markets of the ecosystem (*e.g.*, online advertising).

**The analysis developed within the application of competition law must take these specificities into account**, otherwise they may run the risk of failing to capture the essence of competition in these markets. It is particularly important to highlight that, in these markets, prone to high concentration levels, potential competition plays a key role. The incentives of incumbents to protect their ecosystem may trigger strategies aimed at promoting the persistence of market power and limit contestability and potential competition.

**An incumbent platform may “close the entry point” to the market through an aggressive strategy of acquiring small and potential rivals**. These pre-emptive mergers may aim at expanding/strengthening the ecosystem by incorporating products/services or discontinuing/limiting the introduction of new products (*killer acquisitions*).

**One of the challenges for competition policy in the digital era is avoiding the risk that pre-emptive mergers escape competition authorities' merger control for not meeting notification thresholds**, namely when the turnover of the target firm is small. One of the issues that is being discussed is the need to adjust the notification criteria foreseen in legal frameworks of competition so as to capture these mergers, in particular those that harm competition. Recently, in June 19<sup>th</sup>, the Commissioner for Competition, Margrethe Vestager has stated that, in the European Commission, it is important to investigate the adequacy of introducing additional notification criteria linked to the value of the merger, as it was the case in Germany and Austria.

**Incumbent platforms may also adopt exclusionary strategies, for example, by restricting their rivals' access to the data they need in order to carry out their activities**. Access to data has been the object of legal and regulatory developments towards providing users with more control over their data, such as the General Regulation on Data Protection.

**At the sectoral level, the Second Payment Service Directive (PSD2) stands as a pioneering example of regulation of access to data in the digital era**. PSD2, transposed to Portugal in November 2018, imposes obligations on banks to, upon client consent, provide FinTech operators with access to client data in order to provide certain payment services. In this regard, the Portuguese Competition Authority (Autoridade da Concorrência, AdC) identified, in its October 2018 FinTech Issues Paper, a risk of foreclosure, by banks, of FinTech operators access to client data and issued several recommendations to mitigate this risk.

In fact, exclusionary strategies in the digital area may take specific forms, namely based on the exploitation of users' behavioural biases, for example, through default options (*e.g.*, applications) or the promotion of salience effects that divert consumers from certain products/services to others.

**In digital markets, rather than competition being “a click away”, it may well be that exclusion is “a click away”.** The first statement, that is frequently used to disregard competition concerns in digital markets, abstracts from the market power that may arise from behavioural biases of consumers themselves. The recommendations set forth by the AdC in its FinTech Issues Paper are illustrative of how exclusion may arise in the digital era, when it raises awareness to the fact that the mere introduction of additional authentication steps (customer journey) for the client may chill incentives for using new products and services.

**Big data has allowed the development of pricing, monitoring and ranking or recommendation algorithms. These may have positive effects through the reduction of transaction and search costs, and the promotion of product discovery and price comparison, but they may also facilitate reaching and sustaining both explicit and tacit collusive equilibria in the market.** Pricing algorithms may also enable personalised pricing strategies that, while potentially entailing an output expansion, may also allow for an enhanced ability of firms to appropriate consumer surplus.

**Algorithms used to monitor online prices of competitors are already a widely used tool by firms in Portugal.** About 37% of a sample of firms active online in Portugal have reported to using software to automatically track prices of competitors. These results are in line with those of the e-commerce sector inquiry of the European Commission.

**Regarding pricing algorithms, the AdC has not found evidence of a widespread use of pricing algorithms (7.9%) amongst the sample of inquired firms.** However, even if algorithms are not widely used at present, the analysis developed raises issues as to the impact that they may already have, in some market contexts and marketplaces, or may have in the future as they become more widespread.

**Pricing algorithms can be instrumental in collusive agreements between firms, and assist in the implementation of the terms of coordination,** as cases investigated in the UK and the USA illustrate. In these cases, some poster sellers in the Amazon marketplace overcame the difficulty in enforcing the collusive agreement by effectively matching the concerted prices through repricing software. Additionally, simple pricing algorithms may generate pattern decisions that can be deciphered by competitors, thereby promoting tacit collusion equilibria via the increase in market transparency and the implicit commitment to a given pricing strategy. Finally, algorithms based in sophisticated techniques of reinforcement learning may, by interacting with one another, converge to collusive equilibria.

**The AdC warns that firms are responsible for the algorithms they use, and that the application of competition law, in Portugal, follows and incorporates the realities of the digital era.** The use of these tools as a way to coordinate strategies in the market, such as in the example above or through the subcontracting of pricing algorithms to a common supplier, is not compatible with competition law.

**Algorithms can be used by firms in ranking and recommendation of products online, in digital advertising as well as in search engines. The Special Eurobarometer on online platforms shows that, for 75% of the respondents in Portugal, the order in which search results are displayed affects their consumption behaviour** – the highest value for the EU. This allows firms to divert consumers from certain products to others and exploit users’ behavioural biases. This ability introduces the risk of bottlenecks in the market, which grant a competitive advantage to certain products at the expense of others. In particular, these ability allows firms to leverage market power between products and services, especially if algorithms are used in ecosystems or by vertically integrated vertical platforms (e.g., market place that also sells products).