

### **Description for the general public**

With the evolution of computer science, companies have developed algorithms, which automatically perform repetitive tasks. These tasks involve complex calculations and data processing that would have been costly for human beings to execute. Algorithms are now widely used in e-commerce. According to the European Commission's preliminary report on the e-commerce sector survey conducted in 2016, 53% of surveyed companies monitor the prices of their competitors and 67% of them do so using special software programs. As many as 78% of those using these programs use them to automatically adapt to the prices of their competitors.

The impact of data-driven innovation on competition and social well-being is not to be disregarded but algorithms and artificial intelligence can also make it easier for competitors to achieve and sustain collusion without any human interaction. This becomes problematic, as human interaction is the main concern of the current provisions governing anti-competitive agreements. When companies unilaterally adopt their own pricing algorithms to set their own prices, the concepts of "agreement" and "concerted practice" cannot be applied. Each firm has an independent economic self-interest in developing and relying on algorithms and it may even be contrary to the firm's economic self-interest to rely on imperfect human pricing. The current legislative framework seems to be unable to adequately address novel competition risks posed by algorithms and artificial intelligence. The aim of the project will be to provide a basic framework by which a "future-ready" competition law may be outlined.

The research will be primarily carried out using the legal dogmatic method of research (analysis of legal texts), the empirical method and the comparative method. With respect to the choice of jurisdiction and material, the focus of this research concentrates primarily on the application of EU competition law but also (to some extent) US antitrust law to different practices involving algorithmic price fixing.

What motivated me to engage into exploring this topic was the realisation that the combination of big data and technologically advanced algorithms is changing the way in which companies make commercial and strategic decisions. As the Fourth Industrial Revolution takes place, the digital transformation of industries in Europe and in the US is unavoidable. Pricing algorithms are changing the competitive landscape in which many companies operate and the way in which they make commercial and strategic decisions. To ensure that markets continue to work well in the digital economy, the existing competition law rules need to remain relevant in the age of algorithms.

Competition authorities in the EU are also in the process of contributing to the debate on the adequacy of the existing regulations (Autorité de la concurrence, Bundeskartellamt, European Commission, CMA) and are therefore also deriving knowledge from the existing literature. The findings of this project are likely to impact the debate to some extent. The conducted research will particularly result in filling the existing gap in the Polish doctrine of competition law, where until now there have been no publications comprehensively analysing such problems. An in-depth analysis of the problem will constitute a comprehensive source of knowledge about the algorithmic pricing from a competition law perspective. The intention of this research project is not only to summarise the main findings of the literature that is currently available, but also and above all to incorporate novel theories into the discussion.