Expert group for the EU Observatory on the online platform economy

Work stream 3 - INNOVATION:

CASE STUDY: PLATFORMIZATION OF THE AGRICULTURAL SECTOR

Transformation (also data governance) and implication (relationship farmers, big agri and big tech)

Concept note

1. Policy context

This case study aims to analyse the legal and economic challenges from the use of digital platforms in agriculture taking in to account the importance of this sector at the EU level, as the agricultural industry created an estimated added value of EUR 177.0 billion in 2020 and agriculture contributed 1.3 % to the EU-27's GDP in 2020. The introduction of sensor-based digital data, Internet-of-Things (IoT) technologies and big data analytics in agriculture result in applications and solutions that are more precise than human observations. Big data is used to improve decision-making about planting, seeding depth, seed placement, plant disease and machinery diagnostics, tillage, scouting, spraying, harvesting and even marketing.

As identified by the European Commission, the digital transformation of agriculture can facilitate cooperation across the value chain (vertical and horizontal), support farmers, agricultural operators, and offer opportunities for innovative SMEs. By enabling increased precision, digital technologies also provide great opportunities for advancing an ecological transition, as recommended by the Green Deal. This is because sharing data is a key point to improve sustainability, and machine learning applied to farm data might be used to produce more ecologically benign and nutritional foods.

Digital platforms in the agricultural sector are already used as a tool to fostering product innovation and quality improvement. This kind of use can have positive effects for the different stakeholders, but free competition and intellectual property rights of the producers need to be protected.

The main objective of the case study will be to study the different kinds of platforms in agriculture and identify the negative risks to markets and the positive effects. The core domain for this study will be upstream agricultural (farm level) production also, when it's relevant, covering the downstream food supply and distribution chain, where there are lots of data applications to trace the origins and quality of food products.

The study will examine how traditional operators in the agricultural supply chain adapt to digital data. Suppliers' platforms such as machinery companies like John Deere and input producers like Monsanto have built their own platforms to profit from big data and big data analytics. (*Those topics are at the core of the impact of digital data platforms in agriculture, it will be important to consider it in the study*). They are also moving ahead in sharing data between themselves. Non-profit agricultural cooperatives that are also trying to insert themselves in the agricultural data value chain. Besides these traditional operators, new digital players have emerged in agriculture. Data sharing platforms not led by suppliers are trying to to set up new data ecosystems, e.g. Agdatahub, DjustConnect, Joindata.

Important questions for policy-makers in this field are whether there are market failures (competition, asymmetric information, data fragmentation) in agricultural data and services markets that prevent the full realisation of the potential economic efficiency gains from digital data, and whether these gains are distributed among stakeholders in the value chain in an equitable way. Considering that those

aspects were also subject of the study supplementing the Data Act, the study will also focus on industrial data.

However, it is not clear to what extent farmers whose data are reaped by the data-driven firms will benefit from big data and platformisation. In fact, there are serious concerns that what we observe in many digital platform markets may be reproduced in the agricultural-data platform market. For instance, economies of scale and scope in data may induce the platform market to tip; the proliferation of data exchange formats and standards inducing the lack of data portability and interoperability among platforms may raise agricultural operators' switching costs and thereby generate data lock-in; data externality may induce agricultural operators to capture too little share of the value generated by their own data and data analytics.

A key question for the study is how the efficiency gains and additional value-added from data-driven agricultural services will be distributed between farm(er)s and other agricultural operators. The study will examine this question from a farm-centric perspective as well as from an overall social welfare perspective. A related question concerns the impact of the evolving EU regulatory landscape for data access rights on the distribution of benefits between various types of agricultural operators. Consumers' personal data are protected by the GDPR in Europe. This regulation may not be very relevant for machine-generated farm data that are mainly managed through classical private contracts. Some parts of the EU Data Governance Act (DGA) may be relevant for agriculture, in particular the rules imposed on data intermediaries. The forthcoming regulatory proposals for B2B and B2G data sharing in the EU Data Act are likely to be very relevant and will be taken into account. The EU Digital Markets Act would apply to very large platforms only; agricultural data platforms are not expected to meet these size criteria. Proposals for a Common European Agricultural Data Space (CEADS) are still in an embryonal stage and need to become more concrete before their impact on agriculture can be assessed. This will not be covered by the present study.

Some analogy can be made between agricultural data platforms and cloud computing platforms, social media or marketing platforms. Cloud computing platforms can be viewed as a one-sided market with direct network effects ("number-driven" and "data driven" network effects) and hence differ from two-sided markets with indirect network effects between consumers and sellers such as e-commerce market places, app stores, operating systems etc. We need to investigate what type of network effects exist in agri data platforms and who benefits from these network effects. Do we observe similar issues as in the cloud computing market that is heavily concentrated due to high barriers to entry on top of exhibiting high switching costs because of the lack of data portability and interoperability?

If agricultural operators are likely to capture too little share of the value generated by big data and big data analytics due to data externality and data lock-in, what can be done to create a level-playing field for such an important sector to the European economies? Can data access rules and regulations be leveraged to change the distribution of data-driven benefits?

2. Research/Policy questions and methodology

The study will be composed of two parts. Part I will be about the analysis of the status quo and Part II will be about remedies to improve the status quo in benefit of the main stakeholders groups, and the society as a whole.

In both parts, we think that it is important to address the following questions: What are the main business models of digital platforms in the agricultural sector? Which kinds of problems are raised by

data in the digital agricultural platforms? What influence does artificial intelligence have on digital platforms used in agriculture? We will study who gets access to which data under which conditions in the current regulatory setting, and how proposed data policy initiatives might affect this. An important issue here is data access and portability that, in turn, depend on how this data is organized, by who, and the data standards and formats that may contribute towards data portability and interoperability between digital platforms. In line with the recent evolution of the data and platforms policy debate, we will examine these questions from a competition angle.

Part 1: Agricultural-data platforms and data lock-in

The first part tries to understand the business models of platformization as governance structures of the different stakeholders and their impact on agricultural operators. We will distinguish between machinery companies like John Deere, agricultural input producers like Monsanto and agricultural cooperatives as the three main types of organisations in the sector. For instance, the EC analysis of the recent Bayer/Monsanto merger provides a good treatment of the issue. We will study what are the consequences of the business models of platformization in terms of market outcome and power relationship between platforms and their users defining also who these users might be. We will also cover new types of markets entrants that focus on data-driven analytics and transactions.

We will design questionnaires to be applied to a selected group of organisations and firms, and derive our findings from interviews.

The study will cover different kinds of lock-in effects considering also contractual terms and conditions particularly in agricultural cooperatives and competition issues in the distribution chain. The lack of data portability and interoperability among platforms will raise agricultural operators switching costs and thereby generate data lock-in, which will distort the market outcome. Firms may compete aggressively to attract agricultural operators, only to exploit them later due to high switching costs. For instance, locked-in famers may be subject to self-preferencing. In addition, because of the data externality, it is not clear that whether agricultural operators will benefit from strong competition initially.

However, we should be aware that full data portability is not necessarily the only or the best solution. It may have adverse effects on primary markets and result in fragmentation of data markets, thereby reducing positive externalities from data aggregation.

Part 2: Remedies

Given the description of the status quo in Part I, we attempt to provide a legal and economic analysis of remedies to increase market efficiency by creating a level-playing field in agricultural platforms.

This requires us to think about striking a balance between agricultural operator's data rights and firms' data rights. We will look at this from a private welfare perspective of farms and firms, as well as from an overall social welfare perspective for society as a whole. Platforms will aggregate data so that its value can be leveraged, but there is a need to see how to ensure that the data providers will be compensated and assured that data will not be used in ways that are detrimental to their interests and those of our societies. The study will examine whether these proposals are enough to correct the observed market failures in agricultural data platforms. Particular attention needs to be paid to the new regulatory package, especially the Data Act.