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A methodology to estimate the costs of data regulations

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ABSTRACT

This paper provides a robust and significant explanation of how the costs of data regulation affect downstream industries in an economy. In doing so we first select observable regulatory barriers that explicitly inhibit the domestic and cross-border movement of data, which are currently being implemented by various governments. Second, we calculate the costs of these data regulations for domestic industries through establishing an empirical link between regulation in data and domestic downstream performance at industry level across a set of countries. As such, this paper is the first work that attempts to analyse this connection econometrically by setting up a proxy index of data regulation using a *typology* of existing indices of administrative barriers. We show that the type of regulations prevalent in data indeed tends to affect downstream industry performance of industries that depend more heavily on data services for the countries under consideration in our study. Finally, the negative performance outcomes as a result of data regulation in these countries are employed in a general equilibrium analysis using the Global Trade Analysis Project (GTAP) in order to estimate the impact on country-specific GDP, industry production, and foreign trade.

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1. Introduction

Cross-border data regulation is a new type of regulation, which can impose significant costs on domestic and foreign firms (Christensen et al., 2013). There is, however, relatively little knowledge on the channels through which these regulations on the flow of data affect the performance of industries. To the knowledge of the authors, virtually no empirical assessment has been performed regarding the way in which data regulations may affect the output of domestic industries. This paper therefore is a first attempt to present an empirical approach so as to uncover this relationship between regulations in domestic and cross-border data, and the performance of downstream industries. In particular, the paper assesses the extent to which domestic industries that are highly dependent on the usage of data in their production processes are affected by the extent to which eight governments selected in our study implement regulations in the usage of data.

Regulation of data flows represents a relatively new feature in the broader spectrum of services regulation. It concerns rules on how (personal) data is utilised and processed by firms in the interaction between consumers and producers or between producers. Consumers can be exposed to the release of their personal data on numerous occasions such as whilst using credit cards when economic transactions take place, or during instances that can range from using social media to accessing healthcare services. In many cases, the consumer and producer are located in different geographical locations which motivates the transfer of data domestically or across borders. For instance, although banking services affiliates from which the consumer uses a credit card might be situated in the same country as the consumer, data of the transactions made are often stored centrally on a server elsewhere or are being further processed in head offices of the banking affiliate elsewhere in the world. Data flow regulations aim at regulating whether and how the data is traded between parties or across countries.

As in most other services sectors, regulations of the market are often required to prevent consumers from negative spill-over effects or externalities caused by the inefficient organisation of the sector itself in order to reach a specific wider noneconomic policy objective. Various examples include asymmetrical information in the financial sector as well as inefficient network systems in telecom services, or the existence of natural monopolies in gas and electricity networks. Although no formal type of market failure in the market of data and data services has been developed or accepted in the policy literature so far, one major concern that stands out in this field is privacy protection. This concern refers to the potential insufficient protection that the consumer obtains when the data user or third party utilises the personal data of consumers that is held by them. Moreover, during the transaction of personal data from consumer to producer, consumers may not have perfect knowledge of how and under which circumstances their data is being processed and managed after the transaction has taken place. This second type of concern may or type of externality may be seen as a specific form of asymmetrical information.

As in all services sectors, the challenge for policy makers is to find the right balance between developing necessary regulations that are linked to a particular social objective (or negative externality) and implementing these regulations at minimum cost in terms of economic welfare so that they do not create an unnecessary cost burden for firms (Saez et al., 2014). Yet, new rules on the regulation of cross-border data of consumers for producers could also have detrimental economic effects as shown by Bauer et al. (2013). This is because data services regulations have a side-effect of restricting transactions between domestic and (foreign) using operators, which in turn limits the efficient sourcing of data processing activities.[1] Furthermore, and more importantly, much data is used by all sorts of so-called user industries (i.e. downstream industries) as part of their input structure for production. In fact, services sectors are the main users of data. Regulatory restrictions in

[1] Domestic and using operators can trade these personal data as inputs at arm's length (i.e. cross-border) or in-house through various ways depending on the sourcing strategy. Following Miroudot et al. (2009) if the data is traded within the firm with a foreign country it refers to *offshoring*; if traded outside the firm within the same country it refers to *domestic outsourcing*; if traded outside the firm and with a foreign country it refers to *global* or *international outsourcing*. Normally, trade data is recorded both when trade takes place in-house (intra-firm) as well as arm's length (inter-firm) across borders as it does not make a difference between the two channels.