# Introduction

The scientific community shares a common sense that by default, science should be globally oriented. Academic researchers should present their results to their peers across the world and publish in journals contributed by researchers from the whole world (*globalized journals)*. Journal publication patterns are indicative of the incentives provided by the research system of a given country.

Based on Zitt and Bassecoulard (1998 and 1999) methodology, this paper measures the *journal globalization* (from now on just *globalization*) across countries and disciplines. The more researchers publish in the same journals as their peers abroad, the more globalized their research is. The global dimension of the audience is emphasized (hence globalization), but also alternative specifications based on language and institutional concentration are added to increase robustness of findings.

The cross-disciplines heterogeneity of globalization can result naturally from different publication patterns of researchers. For example in economics, the local research can be more important than in particle-physics. However the cross-country heterogeneity within a single discipline points towards the research evaluation in the country and the research culture in a broader context. Large differences between globalization in Economics in Netherlands and in the Czech Republic deserve attention of relevant stakeholders.

The systemic tendency to publish in non-globalized journals indicates the local researchers’ lack of motivation to open up to the global stream of knowledge. The naïve intuition suggests that the *globalized* journals are likely to be better serving their dissemination goal than journals operating in only a handful of countries. Publishing in globalized journals improves the researchers’ visibility on the international scene (XXX). The more authors contribute to the journal, the higher competition theoretically enforcing higher quality. International publishing leads to higher competition faced by local researchers and to a larger emphasize on novelty in the international context (XXX).

The higher globalization can also lead to a shift of focus from local to global issues. Editors of globalized journal would naturally emphasize topics which are relevant for the broadest possible audience. Although this might be considered positive as researchers across the world work on the most important global issues. However, there are potential drawbacks connected with science bias towards developed world (Chavarro et al 2014).

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| **Figure 1: Share of research output flowing into domestic\* journals in Europe in 2015-2017** |
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| *\*domestic journals are defined as journals with at least 33% authors from the same country as the publisher of the journal. Only articles, reviews, and conference papers are included. Publisher country from Scopus Source List is used to identify the domicile of the journal**Source: own calculaton, Scopus; Scopus Source List* |

In Western Europe and North America, research has undergone a transition from the national to the transnational model of publications already in the 1980s and the beginning of the 1990s (Zitt et al. 1998). Thirty years later, the non-globalized journals still play a substantial role in the countries from the former Soviet bloc (see Moed 2018, Kirchik and Gingras 2012 or Figure 1). For example in Russia, Romania or Croatia more than 25 % of the reseach output is published in journals whose publisher is located in that country and at least one third of authors is affiliated in the same country.

Since the transition the global research landscape changed dramatically. It grows both in terms of size and interconnectedness (Wilsdon 2011). New countries incorporate their research into global knowledge flows (Gazni, Sugimoto, Didegah 2012; Wagner et al. 2015) and collaboration distances decrease (Waltman 2011). The international collaboration drives the growth of the research output (Adams 2013). Developing countries invest heavily to improve its research infrastructure (Wilsdon 2011) and international visibility (Zhou and Glanzel 2010).

Zitt and Bassecoulard (1998 and 1999) suggested a methodology for determining journal internationality. It also allow to scale up from journal level to the national level. However, since then any systematic evidence on the journals’ internationality is missing. This paper applies similar methodology to study the changes in the globalization landscape in the new millenia. How is China globalizing its fast growing research output (Leyersdorf)? How about Russia and Eastern Europe?

Based on data on 34 964 journals indexed in the Scopus Source List (Scopus 2018), we derived 8 indicators of journal globalization. These were subsequently scaled-up to the level countries, disciplines and time. The final dataset consists of globalization scores for 174 countries across 27 narrow disciplines and 4 broad disciplines (plus 1 ubiquitous *All disciplines*) between 2005 and 2017.

The following section describes used methodology and its main limitations; in the second section we describe collection of data and its characteristics and the third describes results. The last section concludes. The paper is accompanied by an already released interactive study available at <http://www.globalizationofscience.com> (Macháček and Srholec 2019). Readers can spend their time with the interactive application, as it offers an intuitive way of exploring the results of this paper.