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Meaningful metrics

The Matthew Effect of Plan S: Is Gold OA publishing mainly a business model fitting the rich in science?

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Universiteit Leiden

Outline of the presentation

- Methodology of analysis of OA publishing
- Gold OA, APC-rates and journal metrics
- Some first observations
- Gesture to our hosts

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Methodology of analyses of OA to publications

Criteria for analyzing OA to publications

Over time, we have defined criteria for the analysis of OA uptake *

- **Sustainable**
  - ❖ Publications are OA in the public domain, without immediate and direct risk of disappearing behind a pay-wall => Bronze OA ?
- **Legal**
  - ❖ (Identification as) OA should not be based on 'illegal acts' and should not be based on copyright infringement => SciHub & ResearchGate ?

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* Developing indicators on Open Access by combining evidence from diverse data sources
Thed van Leeuwen , Ingeborg Meijer , Alfredo Yegros-Yegros and Rodrigo Costas
Proceedings of the 22nd international conference on STI indicators, Paris, France, 6-8 Sept, 2017

Characteristics of Open Access publishing

- Four main OA publication types can be distinguished:
  - ***Gold***: the journal is completely open, author pays (APCs) for Openness;
  - ***Green***: the journal allows openness after an embargo period, pre-publishing manuscripts can be stored in a repository;
  - ***Hybrid***: one buys OA papers in an otherwise subscription journal, that is in principle 'closed' or toll-access;
  - ***Bronze***: Publishers open up content of their journals, that are in general toll-access journals.

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Data sources: advantages/disadvantages

- **Web of Science**
  - **Advantages**: consolidated database, citation linkages, and complete metadata *(author affiliations and classification scheme available)*
  - **Disadvantages**: commercial/proprietary, coverage issues *(SSH, books, conference papers)*

- **Unpaywall**
  - **Advantages**: comprehensive *(multiple sources considered in the identification of OA evidence)*, systematic, large coverage *(Crossref publications)* , 'free' source, becoming 'standard in the business'
  - **Disadvantages**: lack of relevant metadata *(affiliations, classification, doc types),* dependency of DOIs *(Crossref)*

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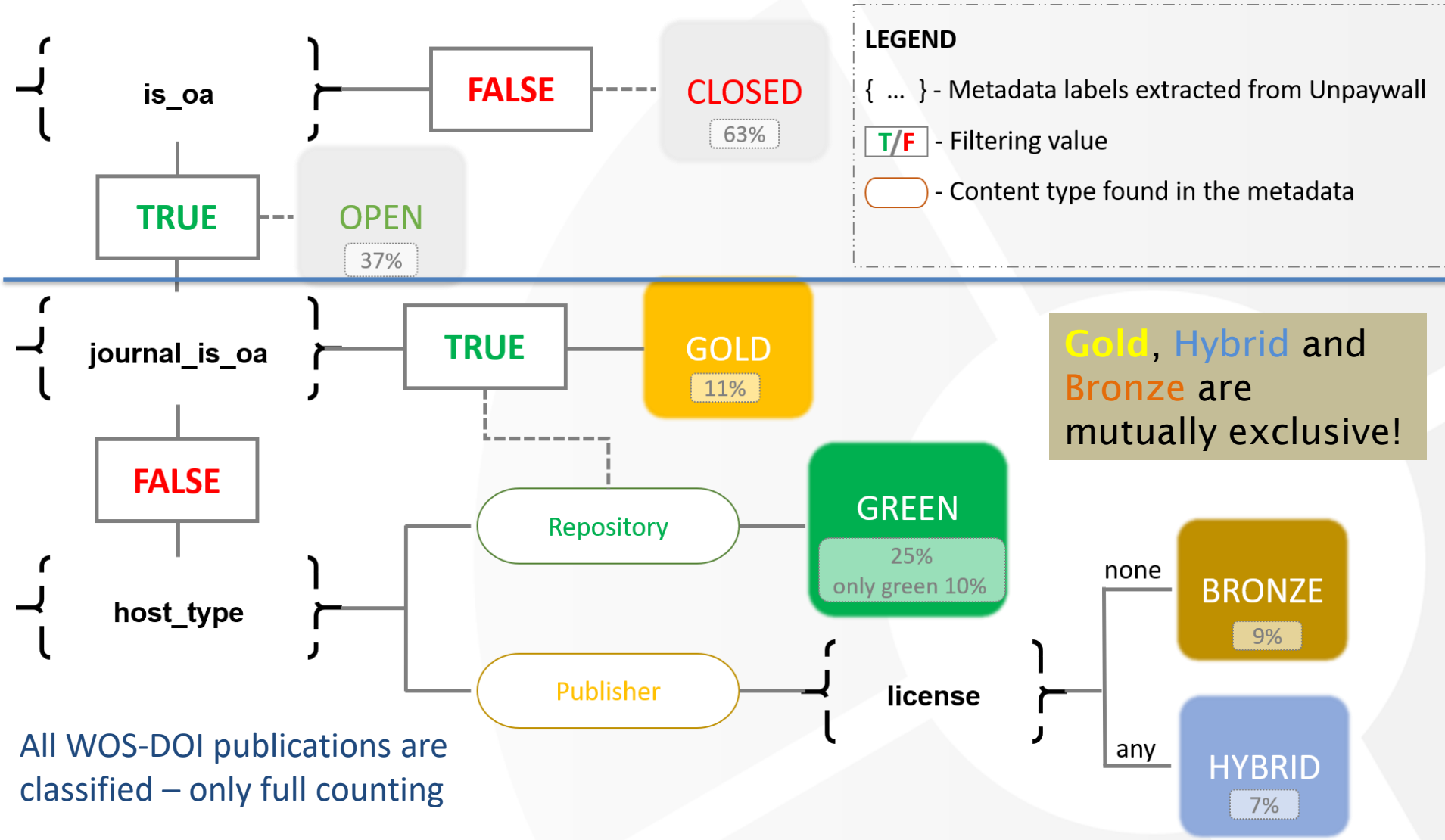
How to identify OA?

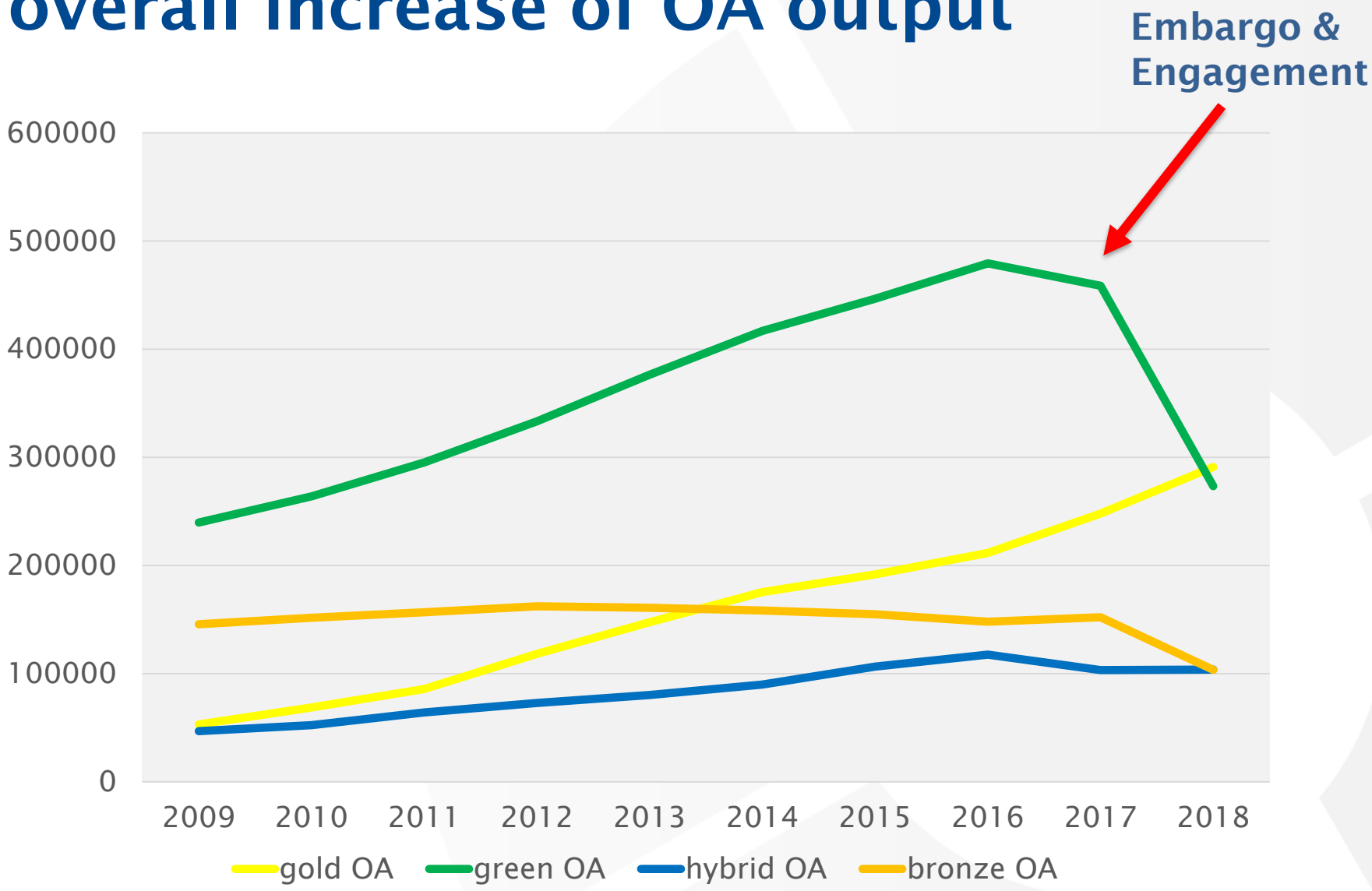
Approach to OA (from Unpaywall) - all evidence classification diagram *



All WOS-DOI publications are classified – only full counting

* Indicators of open access publishing in the CWTS Leiden Ranking 2019, Thed van Leeuwen, Rodrigo Costas, Nicolas Robinson-Garcia, CWTS Blog. May 15th 2019

overall increase of OA output



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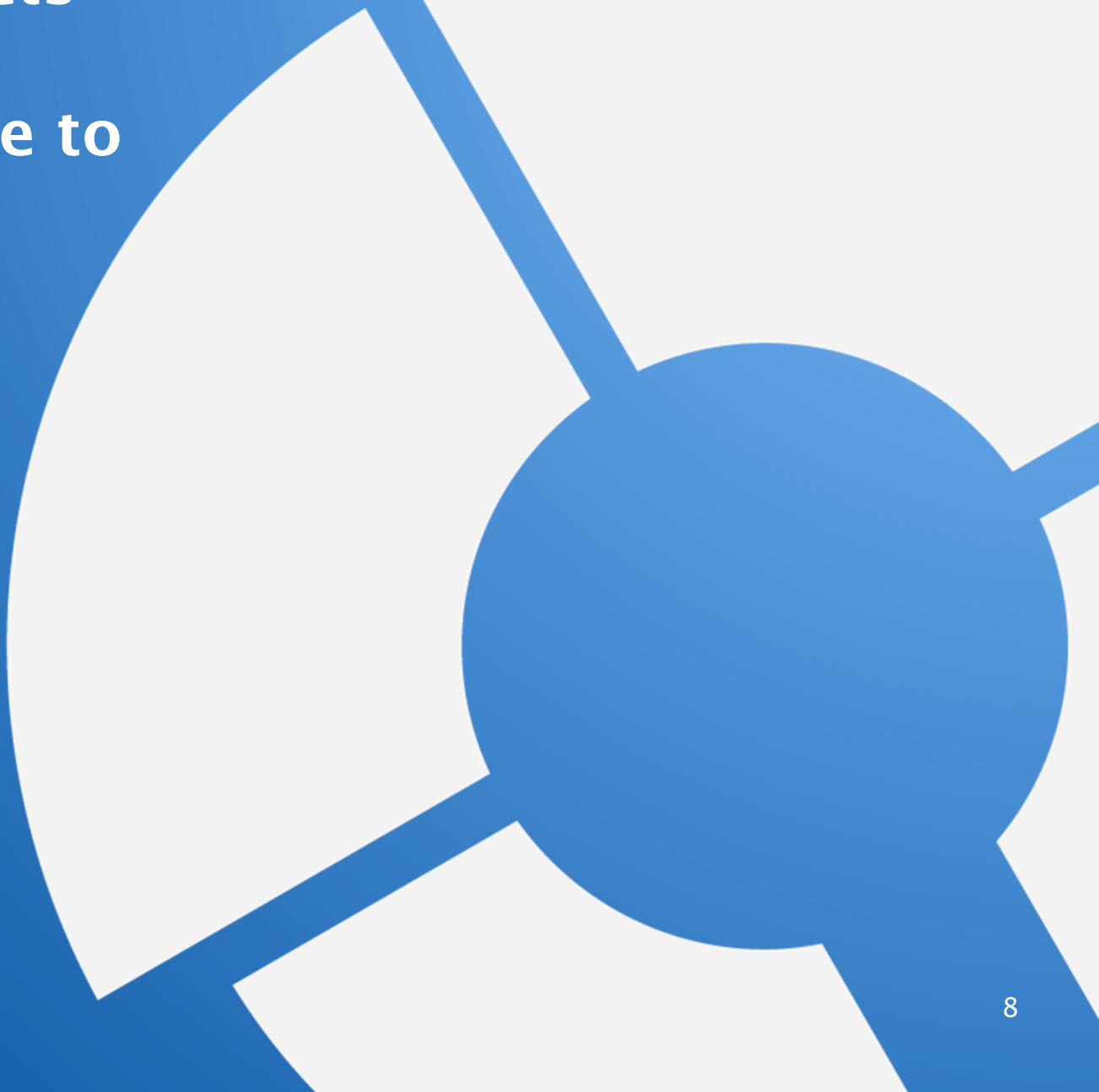
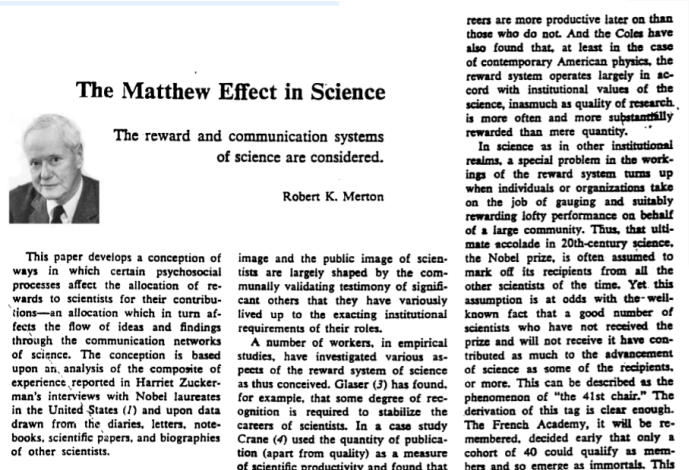
Potential effects on scholarly publishing due to Plan S



The Matthew Effect in Science

- Biblical reference (to the book of Matthew, Matthew 25: 14–29)
- First introduced in science by the sociologist Robert K. Merton (Science, 1968).
- It basically translates from Merton's work into:

"The Rich get Richer, and the Poor get Poorer"



The Matthew Effect in Science

The reward and communication systems of science are considered.

Robert K. Merton

This paper develops a conception of ways in which certain psychosocial processes affect the allocation of rewards to scientists for their contributions—an allocation which in turn affects the flow of ideas and findings through the communication networks of science. The conception is based upon an analysis of the composite of experience reported in Harriet Zuckerman's interviews with Nobel laureates in the United States (*1*) and upon data drawn from the diaries, letters, notebooks, scientific papers, and biographies of other scientists.

image and the public image of scientists are largely shaped by the communally validating testimony of significant others that they have variously lived up to the exacting institutional requirements of their roles.

A number of workers, in empirical studies, have investigated various aspects of the reward system of science as thus conceived. Glaser (*3*) has found, for example, that some degree of recognition is required to stabilize the careers of scientists. In a case study Crane (*4*) used the quantity of publication (apart from quality) as a measure of scientific productivity and found that

reers are more productive later on than those who do not. And the Coles have also found that, at least in the case of contemporary American physics, the reward system operates largely in accord with institutional values of the science, inasmuch as quality of research is more often and more substantially rewarded than mere quantity.

In science as in other institutional realms, a special problem in the workings of the reward system turns up when individuals or organizations take on the job of gauging and suitably rewarding lofty performance on behalf of a large community. Thus, that ultimate accolade in 20th-century science, the Nobel prize, is often assumed to mark off its recipients from all the other scientists of the time. Yet this assumption is at odds with the well-known fact that a good number of scientists who have not received the prize and will not receive it have contributed as much to the advancement of science as some of the recipients, or more. This can be described as the phenomenon of "the 41st chair." The derivation of this tag is clear enough. The French Academy, it will be remembered, decided early that only a cohort of 40 could qualify as members and so emerge as immortals. This

Merton, Robert K. (1968) The Matthew effect in Science, Science, 159 (3810): 56–63.

Introduction

- The launch of Plan S further advocated Gold OA publishing
  (following for example UK and Dutch OA mandates).
- Even stronger emphasis on the '***Producer pays***' model.
- Issue is the low degree of transparency of APCs in the debate
  (hence the initial inclusion of caps in Plan S, followed by a fierce debate on caps)

- Consequently, results of advocating Gold OA in a global context are difficult to assess, in other words, what are the consequences of Gold OA publishing as the standard ?

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Data and methods used

- We want to explore these potential consequences, of implementing Plan S by looking at:
  - Gold OA journals, with and without APCs (DOAJ list)
    - ***Without**: non APC based Gold OA journals*
    - ***With**: APC based Gold OA journals*
  - Average APC rates (available via the DOAJ list)
  - APC-rates converted to $US for comparison (17th June 2019)
  - ***JFIS***, as journal impact measure (field-normalised journal impact score, based on the 'fields' in which a unit is publishing, considering moment of publishing and document types involved.) *

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* Waltman et al (2011). Towards a new crown indicator: Some theoretical considerations. Journal of Informetrics. 2011;5(1):37–47.

Gold OA journals in DOAJ

- Gold OA journals exist with and without APCs ("Diamond OA").
- APCs can be waivered, when costs are taken care off (e.g., eLife, OLH).
- **Assumption**: when the DOAJ list does not report the APC-rate, we consider the journal *'non APC-based Gold OA journal'*

- We want to explore on country level:
  - Share of publications in journals that are APC-based
  - Average of APC rates paid by each country
  - Link that to JFIS (a field-normalized journal metric, solving most problematic issues of the JIF)
  - Look at only the 2017 publication output in WoS covered journals

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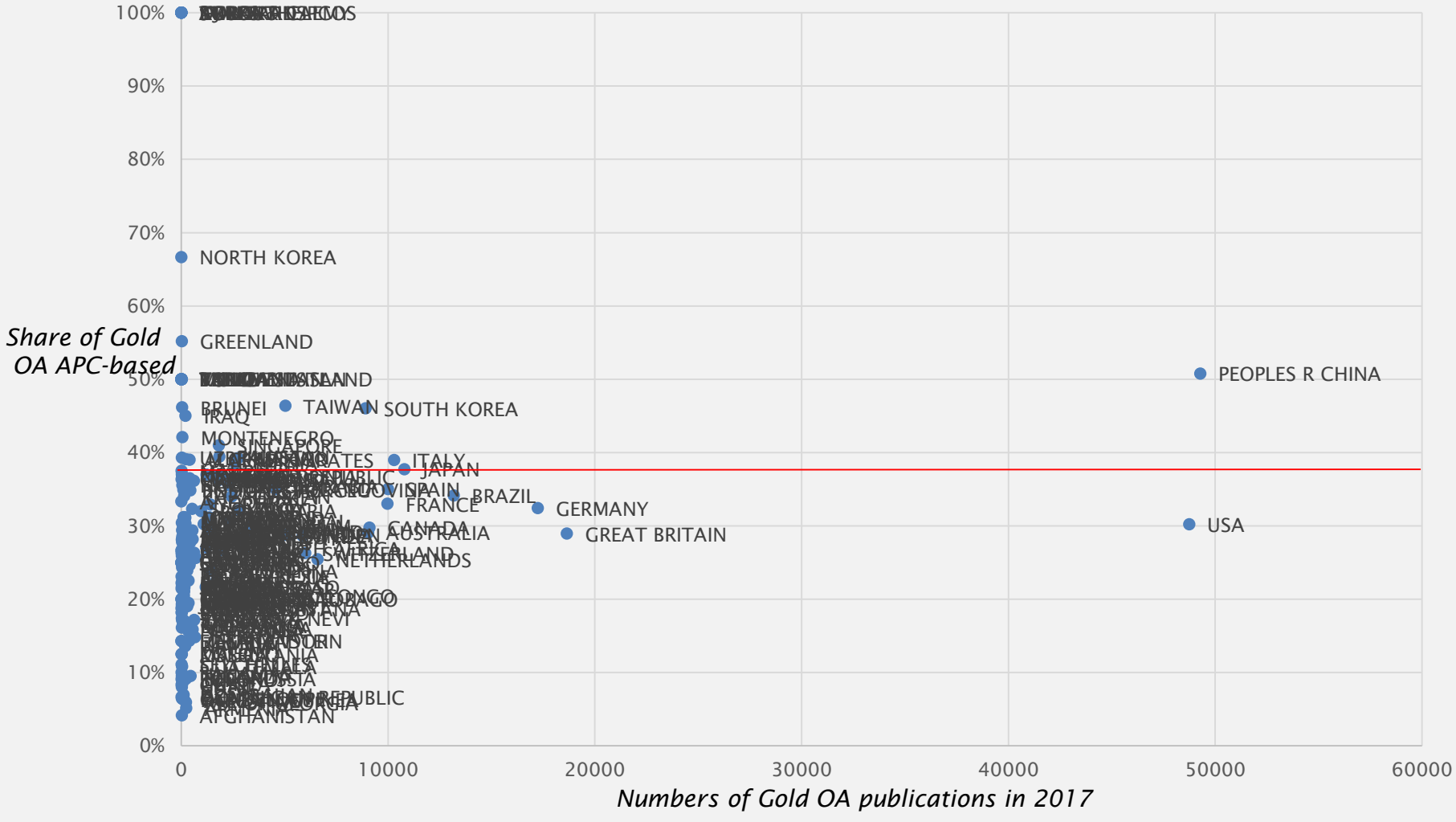
Some findings and figures for 2017…

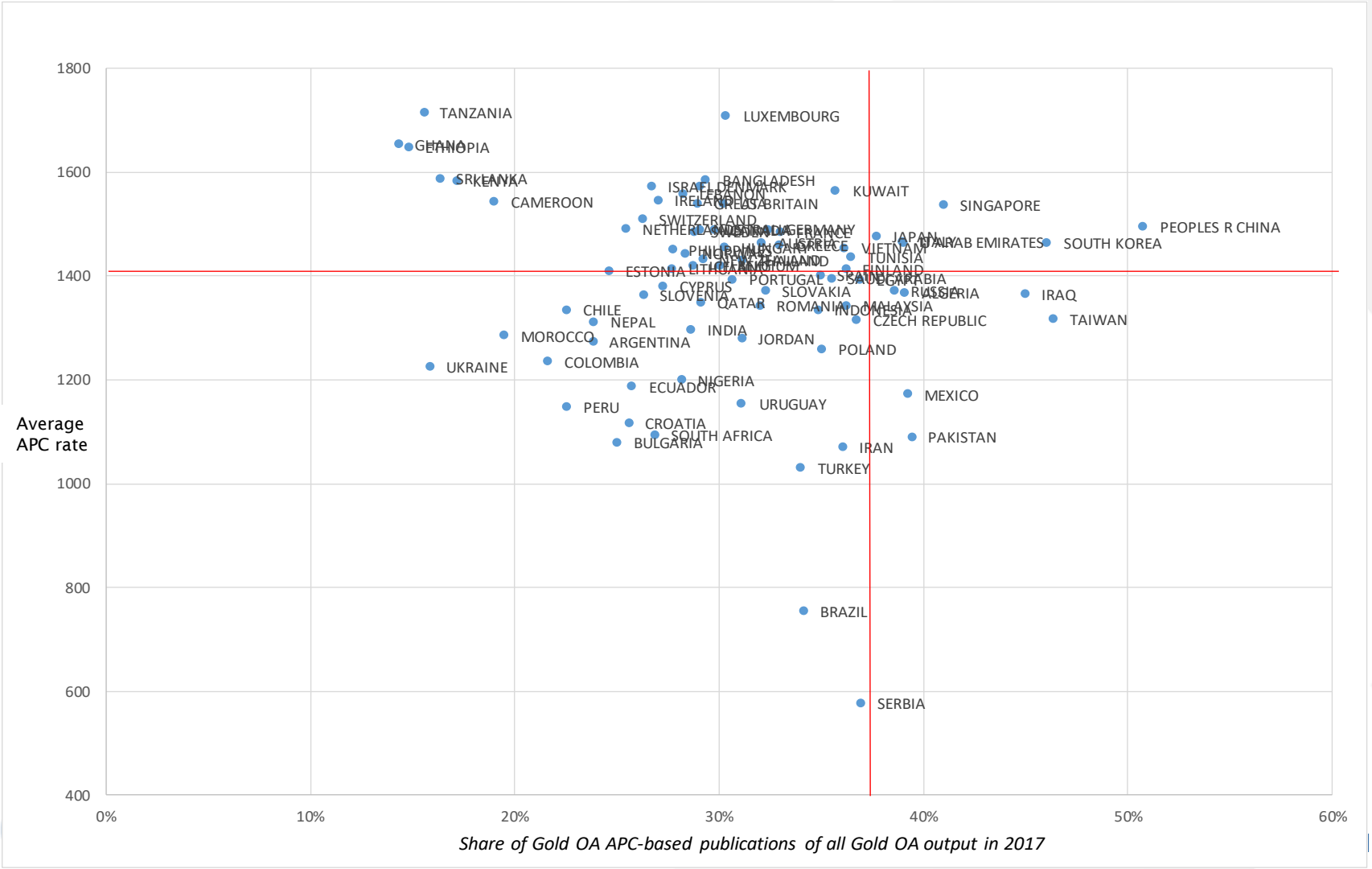
- Share of publications in journals that are APC-based
  - On average , globally, this is 37%
- Value of APC rates that are being paid
  - On average , globally, this is $1405,-

Unique publications Gold OA	212.910
Unique publications Gold OA APC-based (37%)	78.467
Total sum APCs (in US$)	110.272.233
Average APC for Gold OA APC-based (in US$)	1.405

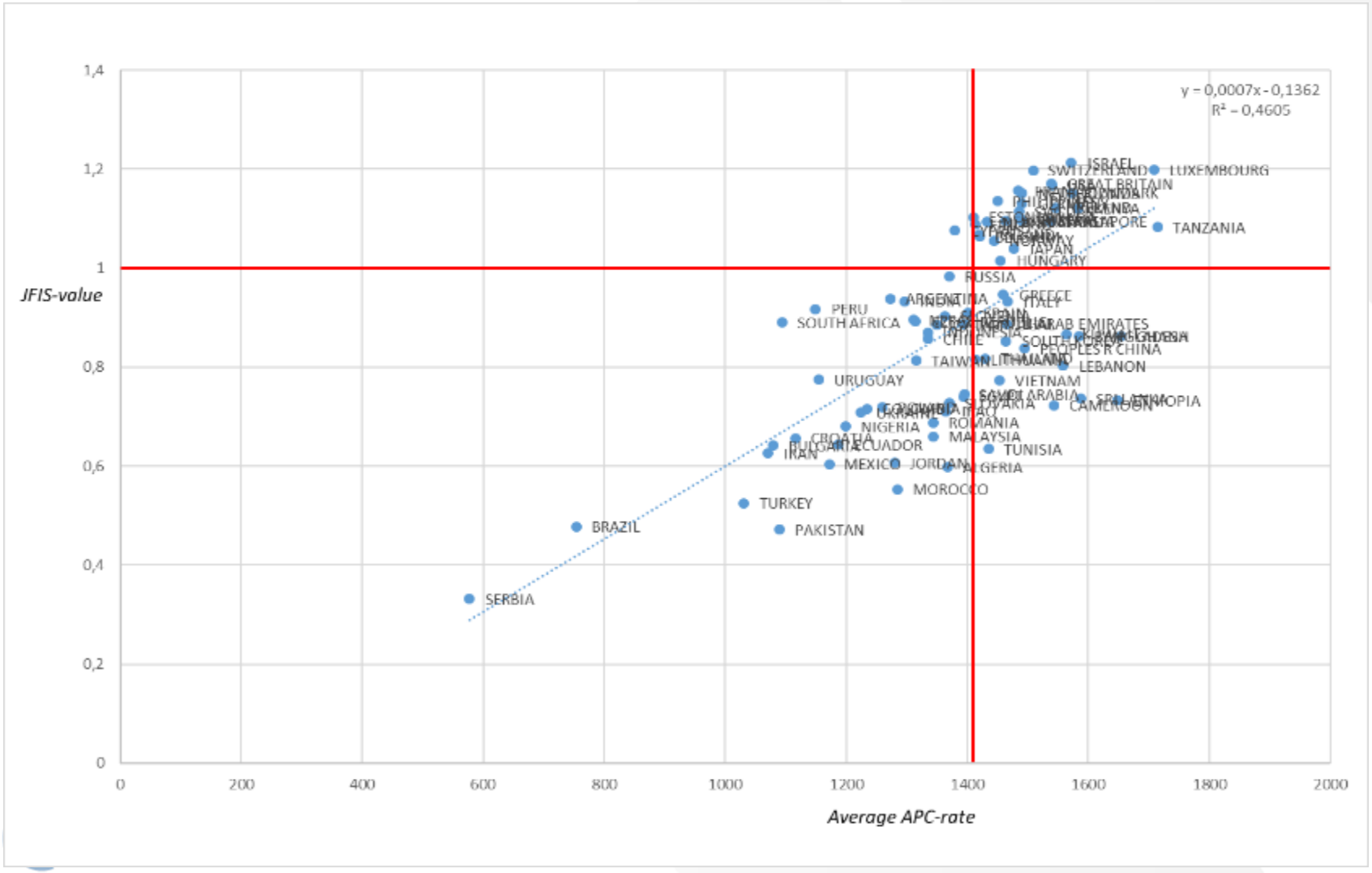
Comparing absolute output with shares of APC-based Gold OA



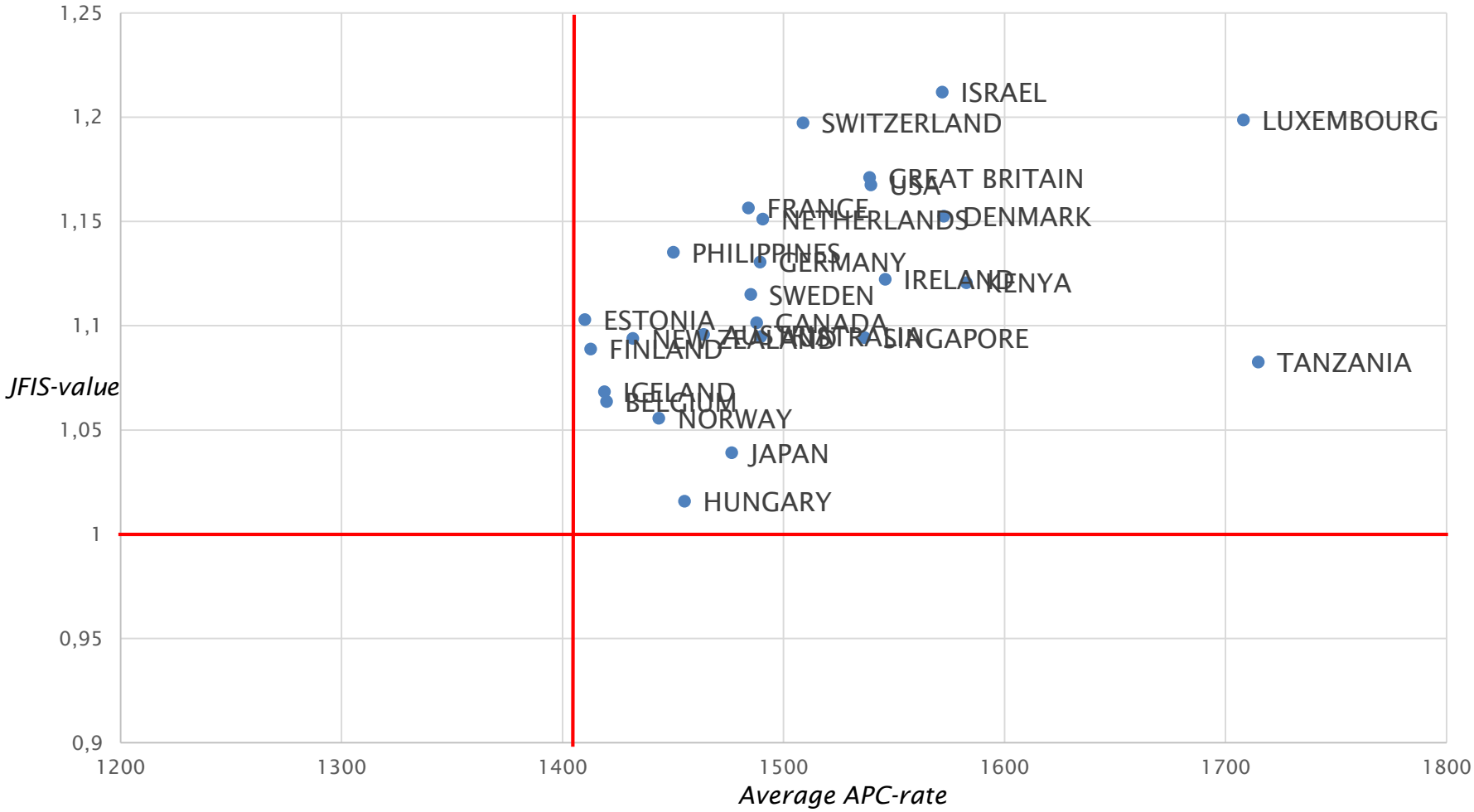
Comparing per country APC-rates with shares of APC-based Gold OA



1 - Per country comparison of APC-rates with average journal impact



2 - Per country Comparison of APC-rates with average journal impact



Some first observations

- The DOAJ list and its information seems like a feasible road to analyze Gold OA publishing, APC rates, and their relation.
- The share of APC-based Gold OA publishing is 37% on a global scale.
- The average APC rate on a global scale in 2017 is some $1400,-
- The total sum of money involved in 2017 is 110 million US $

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Some first conclusions

- Many countries do not seem to be able to afford this average APC rate for Gold OA publishing.
- Homogenization of APC-rates due to my currency exchanging might make the situation more nice that it is in reality …
- While Open Science, and in that OA publishing was meant to equalize the balance between rich and poor, this analysis seems to suggest that this effect might not easily be reached via the Gold OA route.

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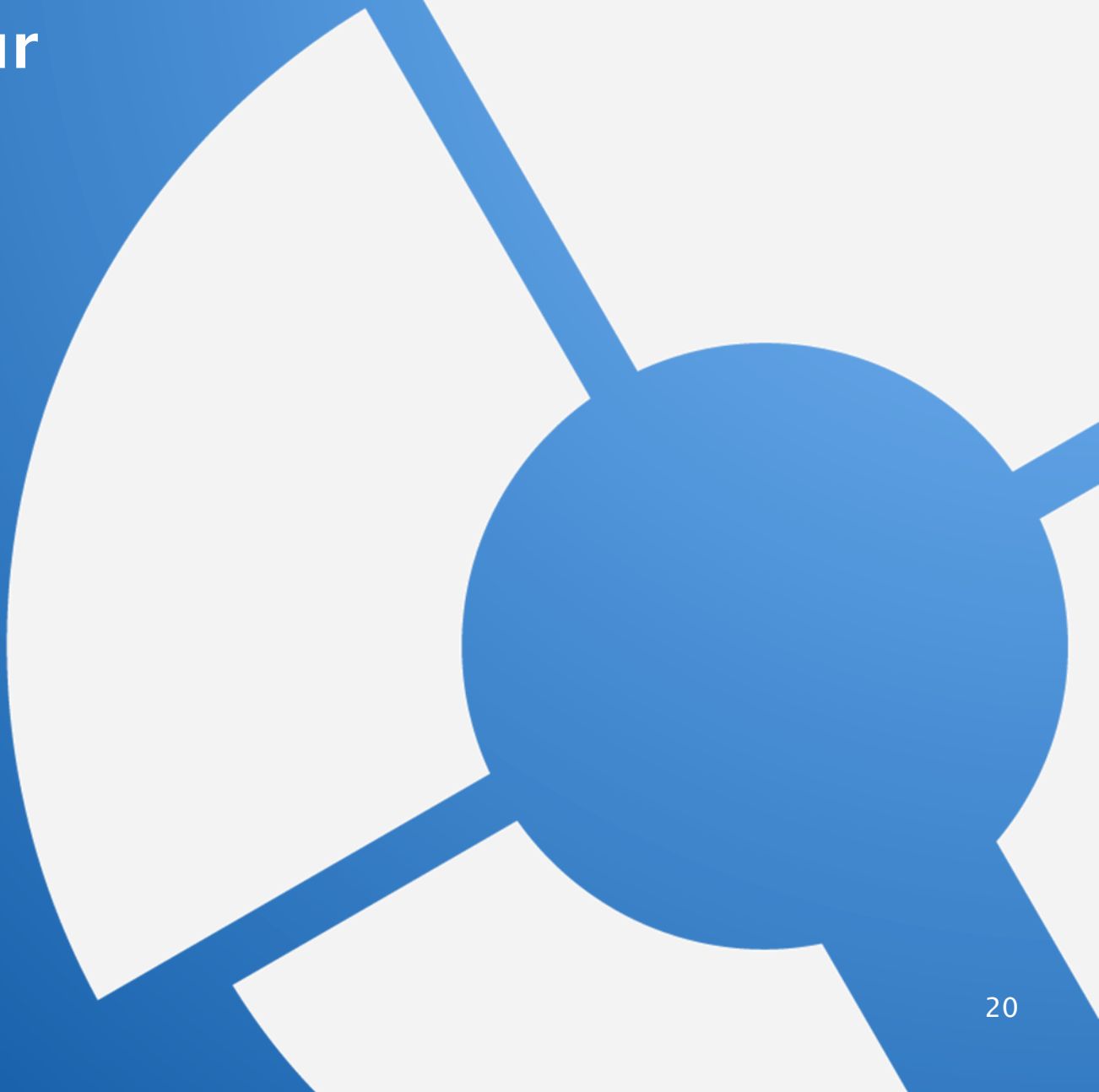
Gesture to our hosts



OA uptake by Croatian universities

- Selected from the CWTS WoS version all Croatian publications
- Selected the universities and university hospitals (15 in total, with Zagreb, Split and Rijeka being the largest 3).

- Linked that up to our OA tags.
- Calculated trend analysis of overall OA uptake (2009-2018)
- Calculated trends of OA uptake in various formats (as shares of all OA output).

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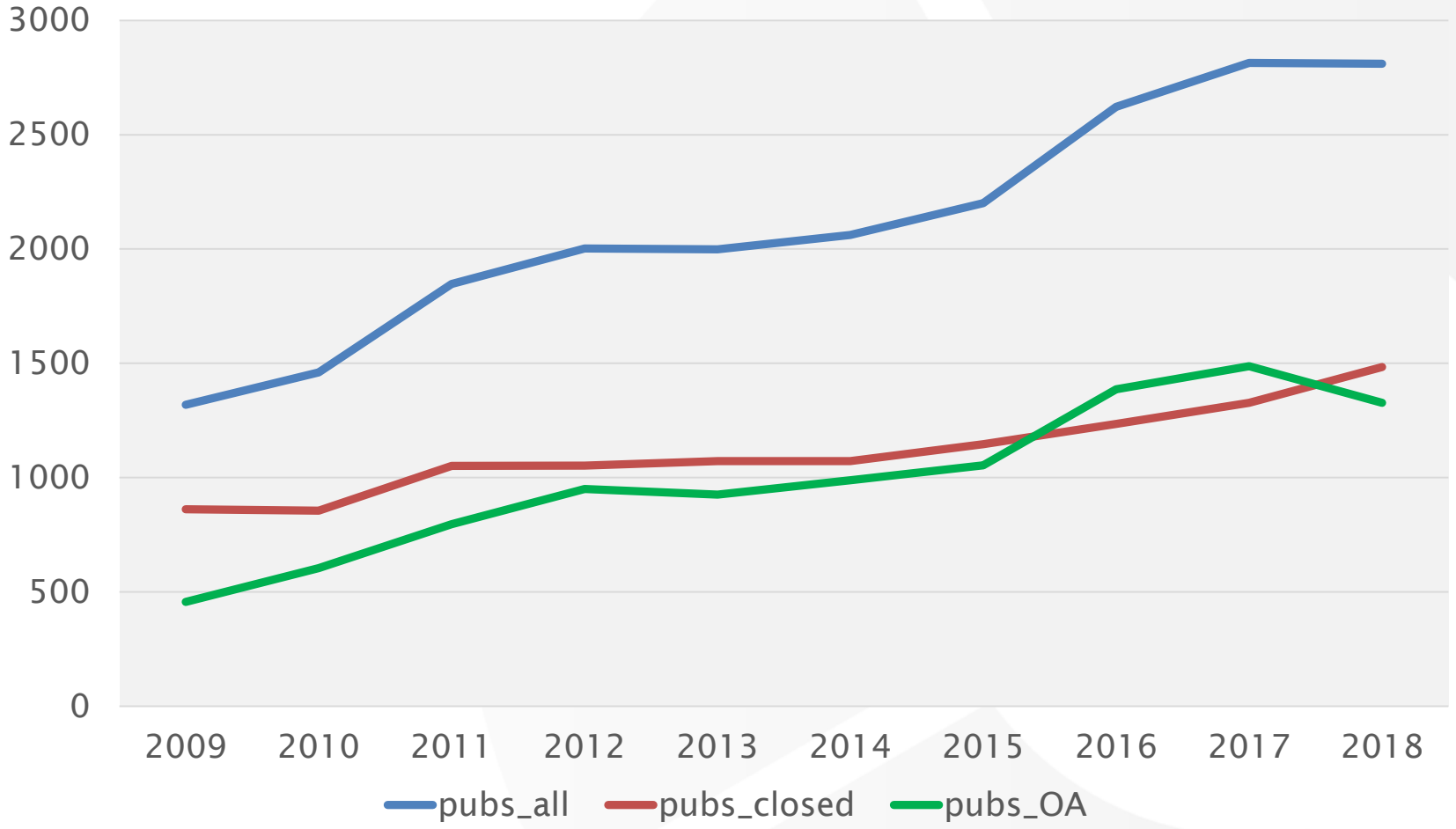
Increasing output of Croatian universities in OA format



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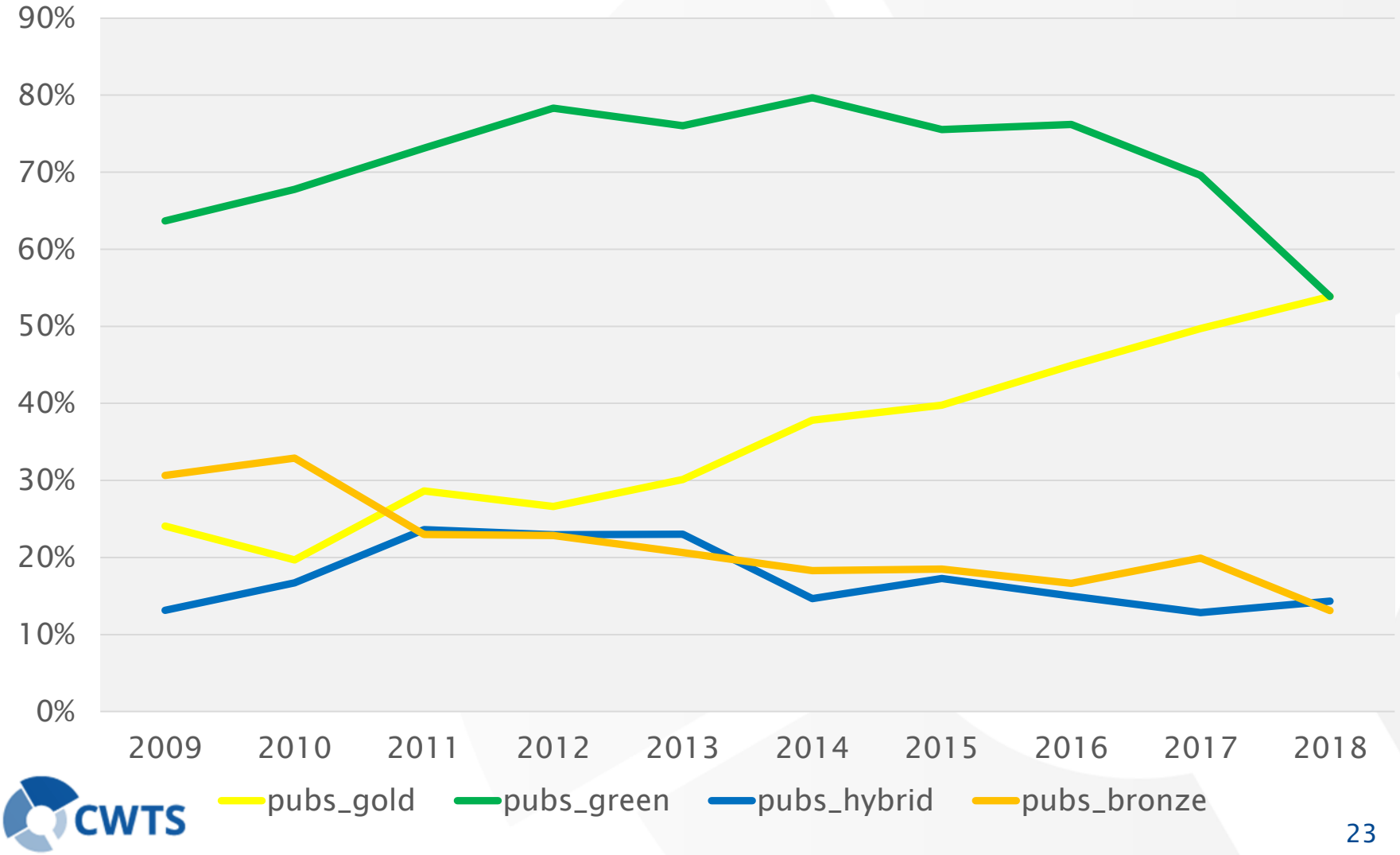
Increasing output of Croatian universities in Gold OA format



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Thank you for your attention!

Any questions?
Ask me now, or mail me
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