



The unseen costs of article processing charges: The different realities of Brazil and the Netherlands

Theod van Leeuwen
André Brasil



Universiteit
Leiden

Centre for Science and Technology Studies,
Leiden University

STI Conference, Granada, Spain
September 7-9th, 2022

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).

*“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

A next policy push: Plan S

The launch of Plan S further advocated Gold OA publishing

- Even stronger emphasis on the '*Producer pays*' model.
 - Article Production Costs (APC) as the price for scholarly publishing
 - 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 ?**

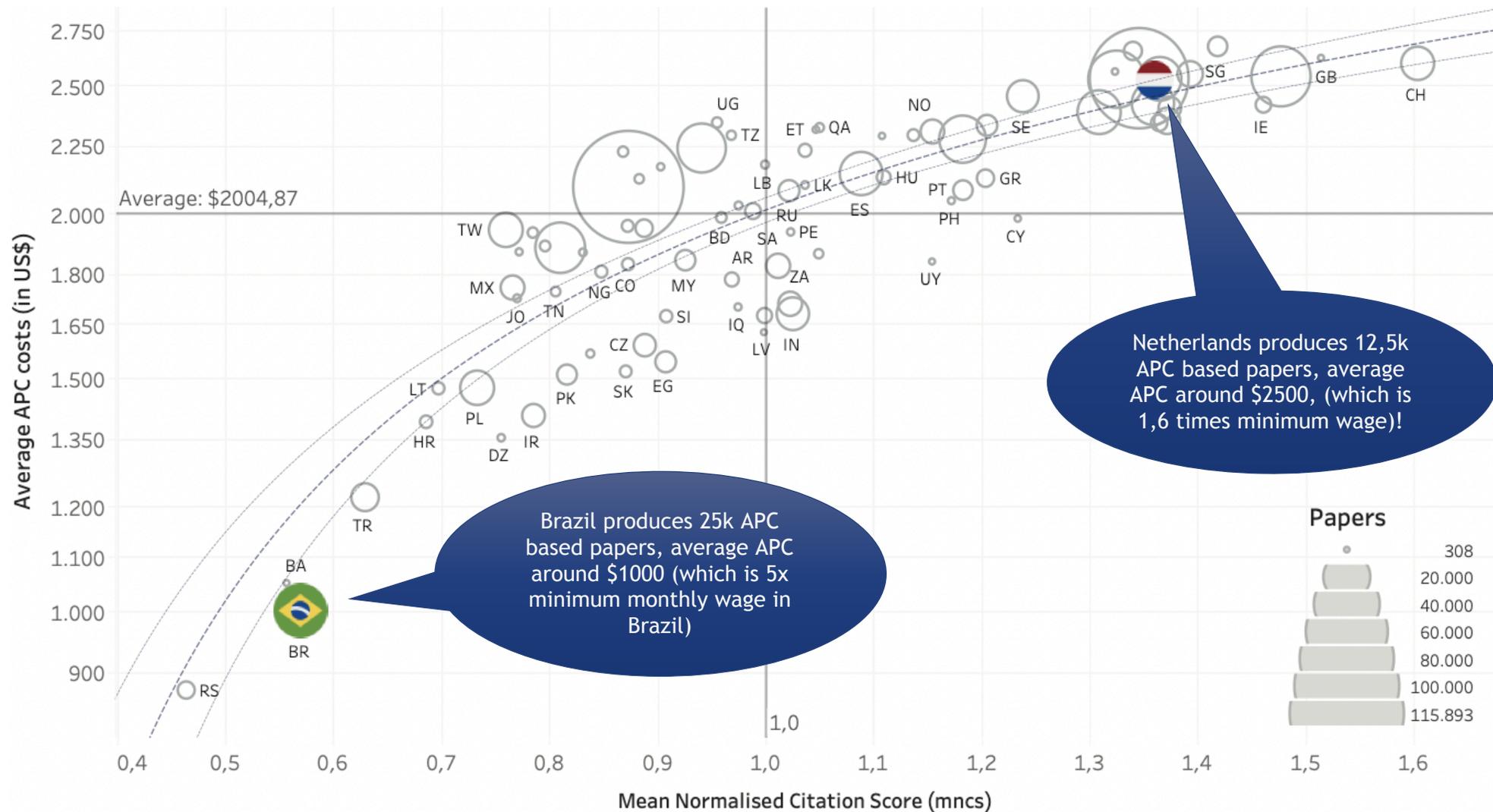
Data and methods used

Exploring potential consequences of implementing Plan S by looking at:

- *Gold OA journals and their APCs* (DOAJ list)
- *Brazilian datasets* (Sucupira Platform, Open Data CAPES)
- *Financial data and the corresponding exchange rates* (OECD)

- ❖ Average APC rates (available via the DOAJ list)
- ❖ APC-rates converted to \$US for comparison
- ❖ PPP rates (the OECD, incl. the purchasing power parity (PPP) indicator (2022). *mncs* as impact measure (field-normalized impact score, based on the 'fields' in which a unit is publishing, considering moment of publishing and document types involved.)

Mean normalised citation score (mncs) of OA papers indexed by Web of Science, by country, in relation to average APC costs (2015 - 2018).



Comparing costs of APCs for Netherlands and Brazil

Netherlands



VS



Brazil

Gold OA = 12,500 publications

mncs 36% above worldwide average
impact level

average APC rate of US\$ 2527

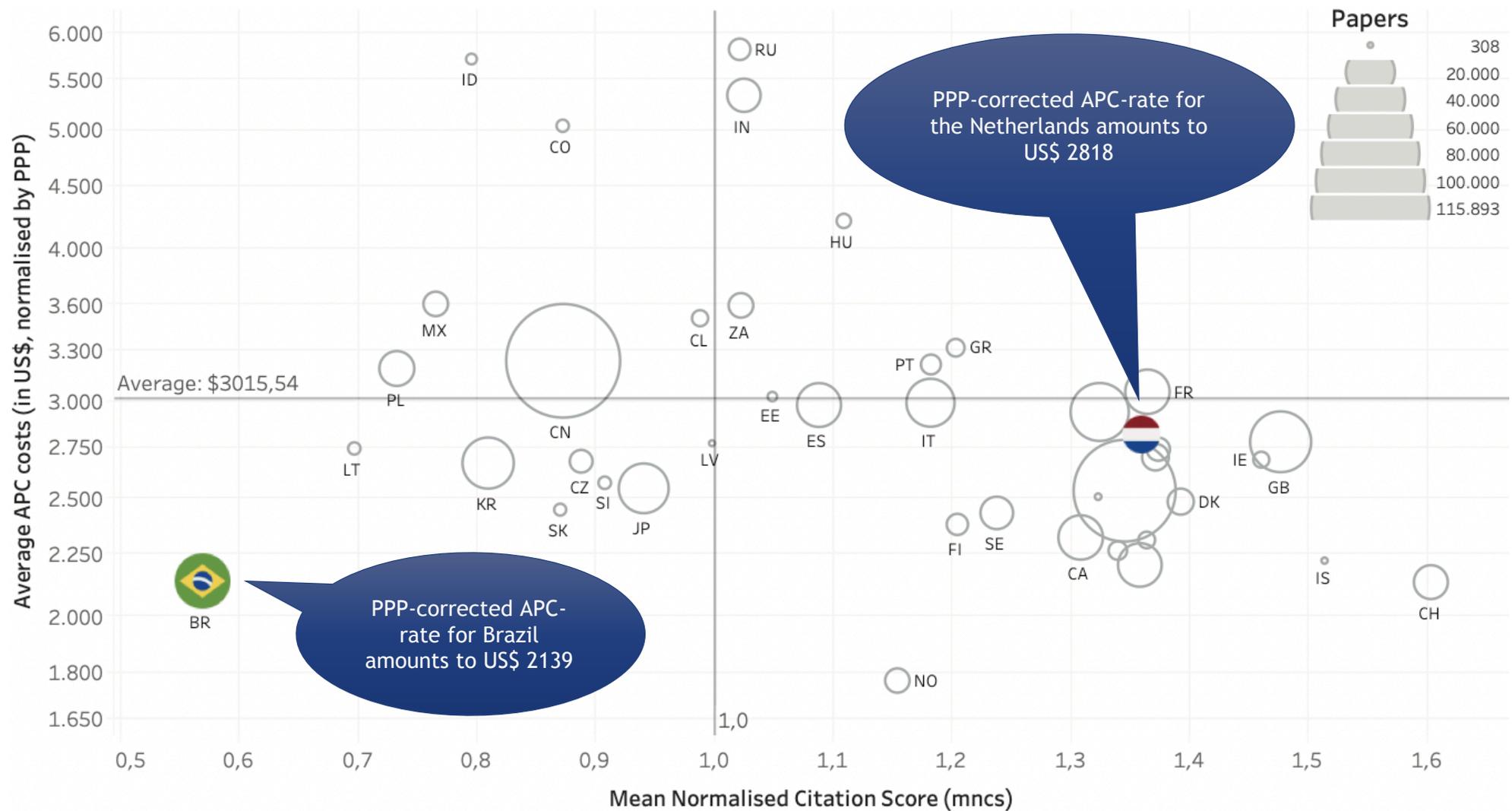
Gold OA output (over 25k publications)

mncs 43% below worldwide average
impact level

average APC of of US\$ 1004 (which is
half of the average measured for all
countries).

When the purchasing power parity (PPP) index is considered, one cannot simply convert currency values only to understand how much an APC would cost for any given country

Mnacs of OA papers indexed by Web of Science, by country, in relation to average APC costs adjusted by Purchase Power Parity (2015 - 2018).



Normalizing for costs of APCs

The price does not always represent the actual cost

- Netherlands Gold OA output has an PPP-corrected APC rate of US\$ 2818
- Brazil's Gold OA output has an PPP-corrected APC-rate of US\$ 2139 (which is still some 33% below average PPP-corrected APC-rate as measured for all countries).
- Applying purchasing power parity (PPP) is applied, we observe that
 - for Brazil, the average APC-rate has increases to 10x minimum monthly wage,
 - for the Netherlands this increased to 1,8x minimum monthly wage
 - **Conclusion:** for Brazilian academics it is much more difficult to live up to international academic-economic standards

Understanding OA publishing ...

Indicators are not always enough to capture the complexity of some national science systems

- In Brazil a journal classification system known as Qualis is used, combining quantitative evidence collected from multiple data sources with a qualitative perspective provided by peer review.
- Brazil was the first country to fully adopt the now called “Diamond OA model” (APCs are paid centrally, publications are made available primarily/primary in the country first)

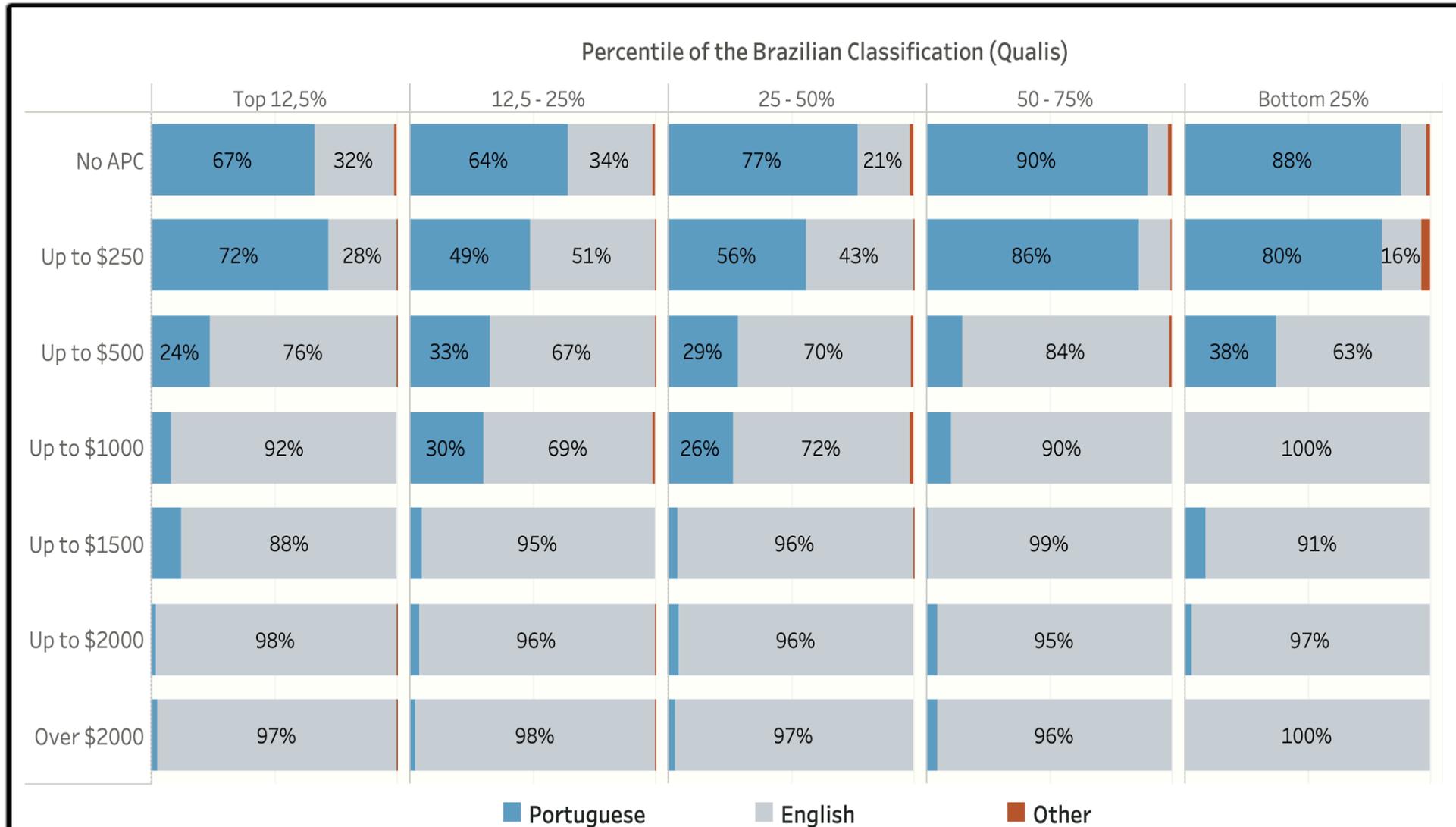
Journals with Brazilian OA output and articles published, according to the APC costs and percentile of the national classification of journals (2015 - 2018)

	Percentile of the Brazilian Classification (Qualis)									
	Top 12,5		12,5–25		25–50		50–75		Bottom 25	
	J	P	J	P	J	P	J	P	J	P
No APC	340	36.689	557	61.191	1.221	82.536	1.978	84.131	2.798	48.521
Up to \$250	8	1.292	29	16.060	56	16.353	31	3.502	17	237
Up to \$500	6	2.180	16	6.260	29	1.511	15	88	5	8
Up to \$1000	18	2.043	18	4.276	36	1.682	17	68	9	24
Up to \$1500	25	1.496	38	1.801	40	554	17	88	11	33
Up to \$2000	102	9.010	84	1.579	60	972	24	145	15	90
Over \$2000	210	11.009	111	2.984	44	529	19	88	6	32
Total	709	63.719	853	94.151	1.486	104.137	2.101	88.110	2.861	48.945

Understanding OA publishing ...

- The results confirm a general perception among the country's academia that there is a high volume of lower quality journals within the Diamond Open Access system
 - 4776 APC free journals classified in the bottom 50 percentile of Qualis, accounting for nearly 60% of all OA journals used by Brazilian researchers in the period of analysis
 - Furthermore, more than 130.000 papers have been published in such journals in the period, around 33% of the open access papers in the period

Percentage of Brazilian OA papers, by language, according to APC costs and percentile of the national journal classification (2015 - 2018).



Understanding OA publishing ...

- These results further suggest a relationship between journal quality and APCs, here along the line of publication language
 - The two lowest APC-rate classes, the majority of the publications is in Portuguese, in the lower two quality classes even over 80% of the papers.
 - Contrary, in the upper three APC-rate classes, most publications are in English (>95% of all papers here), while other languages play very marginal roles here.



Conclusions and discussion...

These results suggest that Gold OA publishing is not the way forward to a fully open and egalitarian global science system

The supposed relationship between journal quality, openness and APC-rates further strengthens the position of the publishing industry

A full resetting of the academic mind regarding the 3 elements mentioned is required

Only then can the diamond model, no longer controlled (directly) by the publishing industry, but by scholarly communities, succeed !

in case of any questions, ask us now
or mail us later



leeuwen@cwts.nl

a.l.brasil@cwts.leidenuniv.nl



[@andrebrasilbsb](https://twitter.com/andrebrasilbsb)



<http://cwts.nl>

