

**Ellen Tise (Stellenbosch University )  
and Glenn Truran (SANLiC)**

*Unbuckling the subscription model: a South African perspective*

6 December 2019



# *Agenda*

- Introduction
- Journey down the road to transformative agreements...
- Stellenbosch University as an example
- Implications of transformative agreements and beyond for South Africa
- Concluding remarks

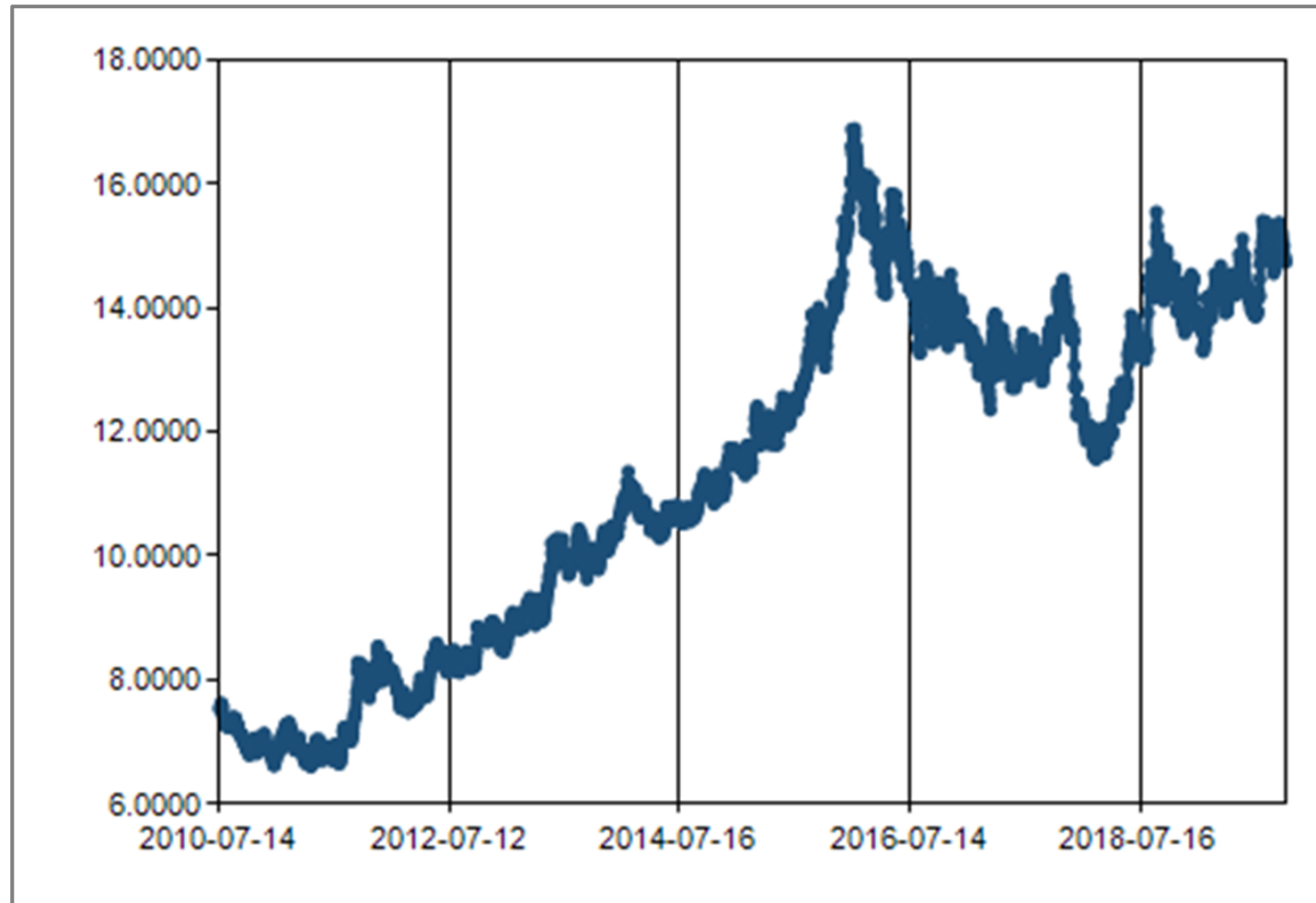
# Recap: Open Access trends

- Budapest (2002), Bethesda (2003) and Berlin (2003)
  - Aim: To make research available online, free of the requirement to subscribe to a resource to obtain access
- New initiatives since 2017
  - Aim: To force publishers to change the way in which research publication is funded
  - OA2020
  - cOAlition S and Plan S
  - Cancellation of Elsevier subscriptions by universities in Germany, Sweden, Norway and the University of California.
  - Association of Universities in the Netherlands (VSNU) negotiating new subscription deals with publishers, e.g. SpringerNature and Wiley.
  - Projekt DEAL and Wiley conclude a nationwide Publish & Read (transformative framework) agreement for Germany

# ***Why Open Access is important***

- Chasm between developed and developing nations
- Strengthening research capacities in all nations is a sustainable way of advancing growth and development
- Open Access a long way to resolving the deep knowledge gap between developed and developing countries
- Creation of a global knowledge base
- Without open science/research/access it will be difficult to achieve the UN SDGs
- Open Access the most fundamental strategy for bringing equality to access to knowledge
- Such equality can strengthen democracies

# *Increase in dollar/rand exchange rate since 2010*



# Effect of exchange rate on subscription fees

## Subscription fees in foreign currency

Product	Currency	Invoice Amount 2011	Invoice amount 2015	% increase between 2011 and 2015	Invoice amount 2016, including 14% VAT	% increase (Note the influence of VAT)	Invoice amount 2017, including 14% VAT	% increase	Invoice amount 2018, including 14% VAT	% increase	Invoice amount 2019, including 15% VAT	% increase	% increase between 2011 and 2019
Elsevier: Science Direct	USD	935 217	1 184 916	27%	1 411 590	19%	1 470 888	4%	1 536 848	4%	1 581 335	3%	69%
Springer	EUR	244 255	288 528	18%	338 789	17%	343 871	1%	350 748	2%	362 671	3%	48%
Taylor and Francis Journal Collection	USD	147 250	237 355	61%	283 878	20%	297 610	5%	308 161	4%	318 674	3%	116%
Wiley	USD	563 992	666 817	18%	795 354	19%	819 971	3%	852 769	4%	894 660	5%	59%

## Subscription fees in ZAR

Elsevier: Science Direct	ZAR	7 260 589	13 576 526	87%	22 218 658	64%	19 340 862	-13%	18 474 561	-4%	21 901 943	19%	202%
Springer	ZAR	2 444 629	3 821 822	56%	6 141 973	61%	4 748 283	-23%	5 228 280	10%	5 597 461	7%	129%
Taylor and Francis Journal Collection	ZAR	1 473 752	2 731 517	85%	4 165 775	53%	3 907 753	-6%	3 674 368	-6%	4 461 144	21%	203%
Wiley	ZAR	4 378 676	7 640 384	74%	12 723 108	67%	10 784 874	-15%	10 250 283	-5%	12 391 041	21%	183%

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SAKSHI SANS TAKKANTOOR

## Journey down the road to transformative agreements ..... on the back-of-an-envelope

1. What do research authors really want (our customer)?
2. What is at stake?
3. What is a transformative agreement and why does it matter?
4. Our data analysis thus far
5. Back of envelope calculations and assumptions

# What to research authors really want?!?!

1. To be able to read whatever they wish to read
2. To be able to publish wherever they want to publish
  - where they think it will be in the best interests of their career advancement

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## Curriculum Vitae

### Prof Abdon Atangana

**Position** Professor  
**Department** Institute for Groundwater Studies (IGS)  
**Address** INSTITUTE FOR GROUNDWATERSTUDIES  
 IB 56  
 UFS  
**Telephone Office** 051/401-3744  
 Groundwater Studies A17A



## Information

### Short CV

**Prof Abdon Atangana** is a leading applied Mathematics professor at the UFS. He obtained his honours and master's degrees from the Department of Applied Mathematics at the UFS with distinction. He obtained his PhD degree in applied mathematics from the Institute for Groundwater Studies. He serves, as reviewer of more than 200 international accredited journals, and has been awarded the world champion of peer review twice, in 2016 and 2017. He also serves on more than 20 editorial boards of applied mathematics and mathematics and editor in chief of 2 international journals. He has presented and participated in more than 20 international conferences and has been invited as plenary speaker in more than 10 international conferences of applied mathematics and mathematics. His research interests are methods and applications of partial and ordinary differential equations, fractional differential equations, perturbation methods, asymptotic methods, iterative methods, and groundwater modelling. Prof Atangana is the founder of the fractional calculus with non-local and non-singular kernels popular in applied mathematics today. Since 2013, he has published more than 165 international accredited journals of applied mathematics, applied physics, geo-hydrology and biomathematics. He is also the single author of two books in Academic Press Elsevier with title

- 1. A derivative with new parameter: Theory, methods and applications**

<https://www.elsevier.com/books/derivative-with-a-new-parameter/atangana/978-0-08-100644-3>

- 2. Fractional Operators with Constant and Variable Order with Application to Geo-hydrology**

<https://www.elsevier.com/books/fractional-operators-with-constant-and-variable-order-with-application-to-geo-hydrology/atangana/978-0-12-809670-3>

Prof Atangana has introduced the following mathematical operators:

# The status quo in SA

## South Africa: Corresponding Authors Journal Output 2014–18



Overview of the volume and publisher share of scholarly journal articles published between 2014–2018 by corresponding authors affiliated with institutions of country: South Africa.

# Comparison: Sweden vs South Africa

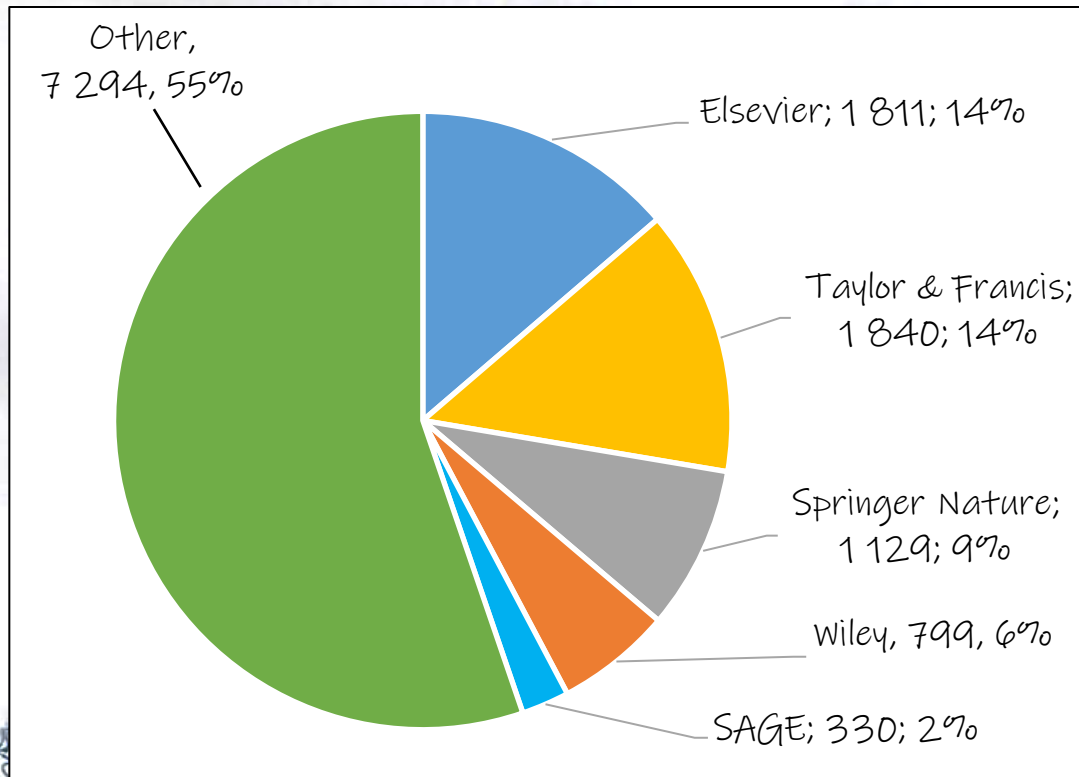
Reference notes	Sweden	South Africa
Cost of ScienceDirect in 2017	€ 12 million (\$ 13.9 million)	\$ 11.6 million (€ 10 million)
Publication Data comparison for 2014 (rounded).	<ul style="list-style-type: none"><li>total papers: 26,000</li><li>corresponding author papers: 15,400</li></ul>	<ul style="list-style-type: none"><li>total papers: 12,000</li><li>corresponding author papers: 7,600</li></ul>
Subscribing institutions	<ul style="list-style-type: none"><li>38 Universities</li><li>128 Academic &amp; Research Institutions in Sweden</li></ul>	<ul style="list-style-type: none"><li>26 Universities and 6 relevant research institutions</li></ul>

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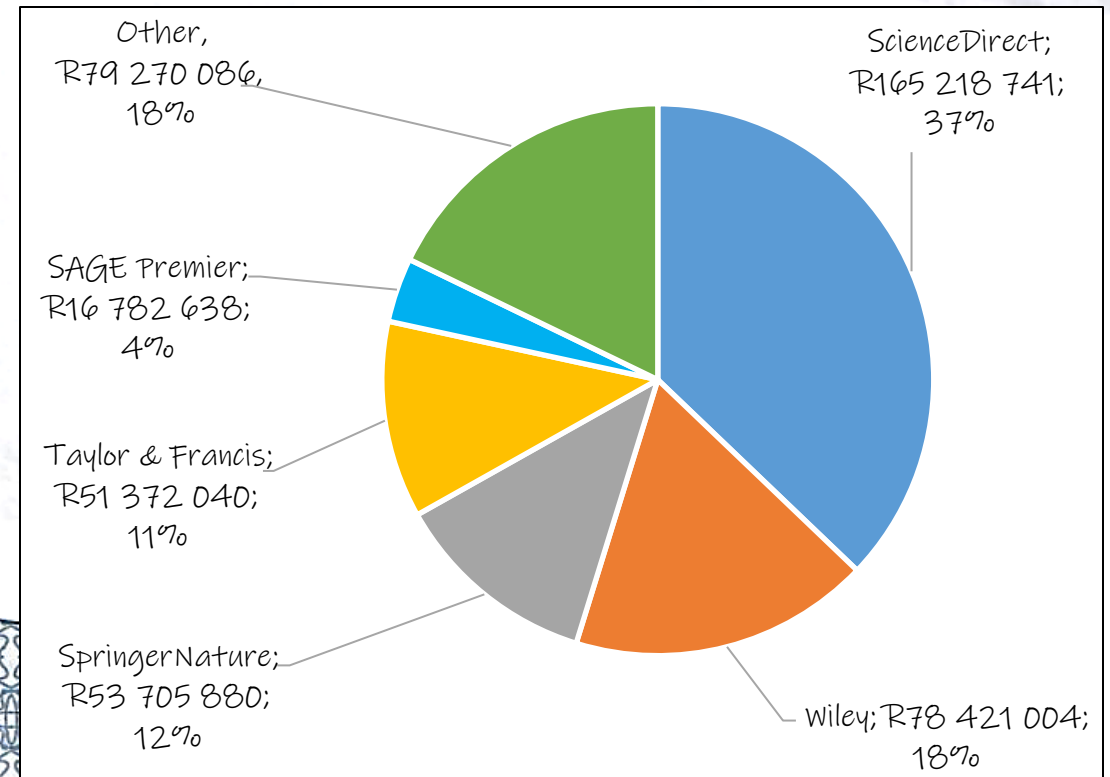
# Paying to read vs paying to publish in SA - the Big Five

Deal	Subscribers
ScienceDirect	28
Wiley	19
Springer Nature	25
Taylor & Francis	24
SAGE Premier	18

Research output -  
corresponding authors [45%]



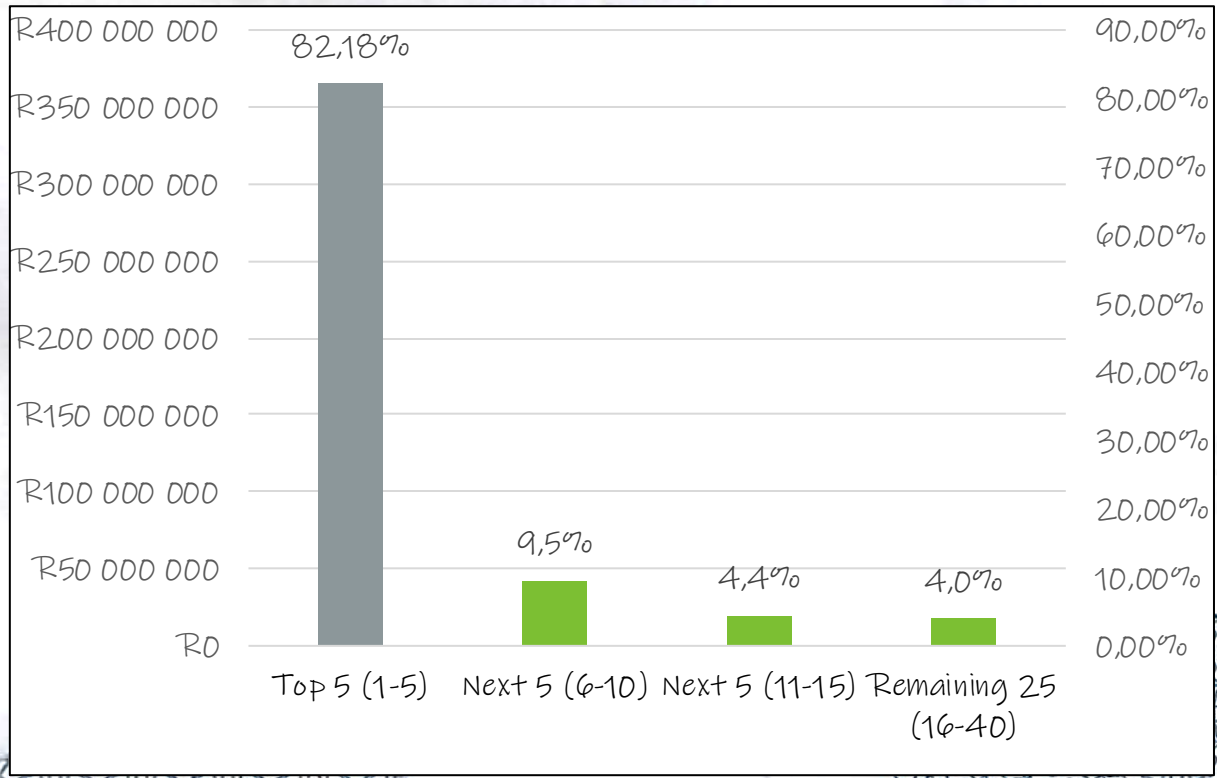
Journal Subscription  
Expenditure [82%]



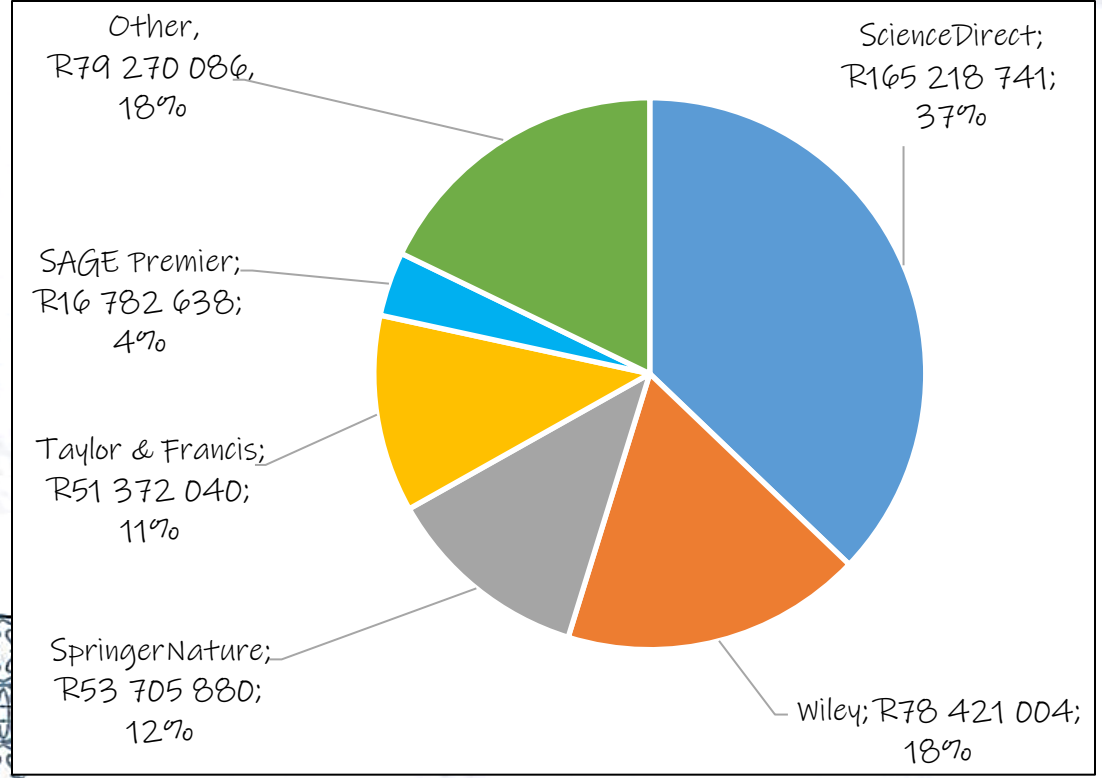
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Deal	Subscribers
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Where the money goes .....



Journal Subscription Expenditure [82%]



# Transformative agreements

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- Cost neutral transition (from paying to read to paying to publish).
- Single publish and read (PAR) article fee for publishing in any subscription or hybrid journal. The more you publish, the more you pay.
- Pure gold OA journal APC will continue as normal (or a discount may be negotiated).
- Fee is paid annually upfront (based on former subscriptions) and an adjustment is made at end of year, depending on actual research output using the PAR fee per article.
- Researchers continue to publish where they wish, but with immediate OA and they retain copyright
- All readers in participating institutions simultaneously have read access to everything in the deal

# We are not alone! There is increasing uptake of transformative agreements globally

■ ACS ■ Akadémiai Kiadó ■ Cambridge University Press ■ EDP Science ■ Elsevier ■ Emerald ■ IOP Publishing ■ IWA Publishing  
■ Karger ■ Lippincott Williams & Wilkins ■ Oxford ■ RSC ■ Sage ■ Springer Nature ■ Taylor & Francis ■ Thieme  
■ Walter de Gruyter ■ Wiley

**Austria**



**Finland**



**France**



**Germany**



**Greece**



**Hungary**



**Netherlands**



**Norway**



**Slovenia**



**Spain**



**Sweden**



**Switzerland**



**United Kingdom**



**United States**



# How much does it cost?

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## Status Quo:

(subscription plus hybrid)

- Subscriptions
  - SANLIC
  - Non-SANLIC
- Hybrid OA charges
  - APCs
  - Page, colour, graphs
- Pure Gold OA charges
  - APCs
  - Page, colour, graphs

## Transition:

(transformational agreement)

- Publish and read fee (for closed and hybrid journals)
- Back file purchase fees
- Pure Gold OA charges
  - APCs
  - Page fees
  - Colour fees
  - Graph Fees

Cost neutral

## Objective:

pay to publish only

- Pure Gold OA charges
  - APCs
  - Page fees
  - Colour fees
  - Graph Fees
- Remaining back file purchases

# Data Analysis Pilot Project : Taylor & Francis (2014-2018)

Key Concepts:

1. Eligible articles are defined as primary research or review articles.
2. Eligible authors are submitting corresponding authors affiliated to SA institutions.
3. What is the combined cost of reading and publishing for our institutions?

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# Data Analysis Pilot Project : Taylor & Francis (2014-2018)

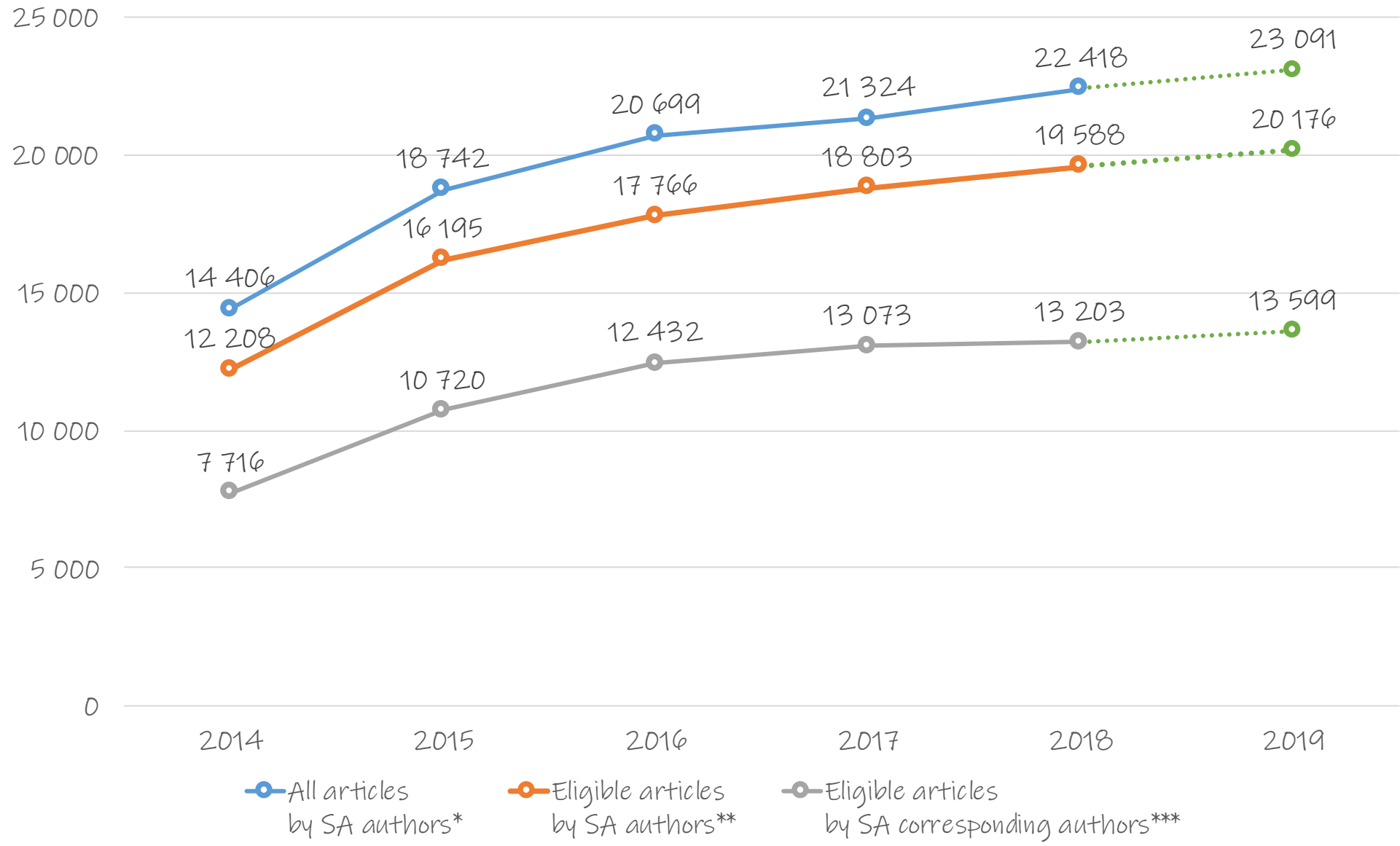
Data synthesized from multiple sources:

1. Taylor & Francis record of acceptance
2. Web of Science
3. Scopus
4. Unpaywall
5. Institutional member verification of records

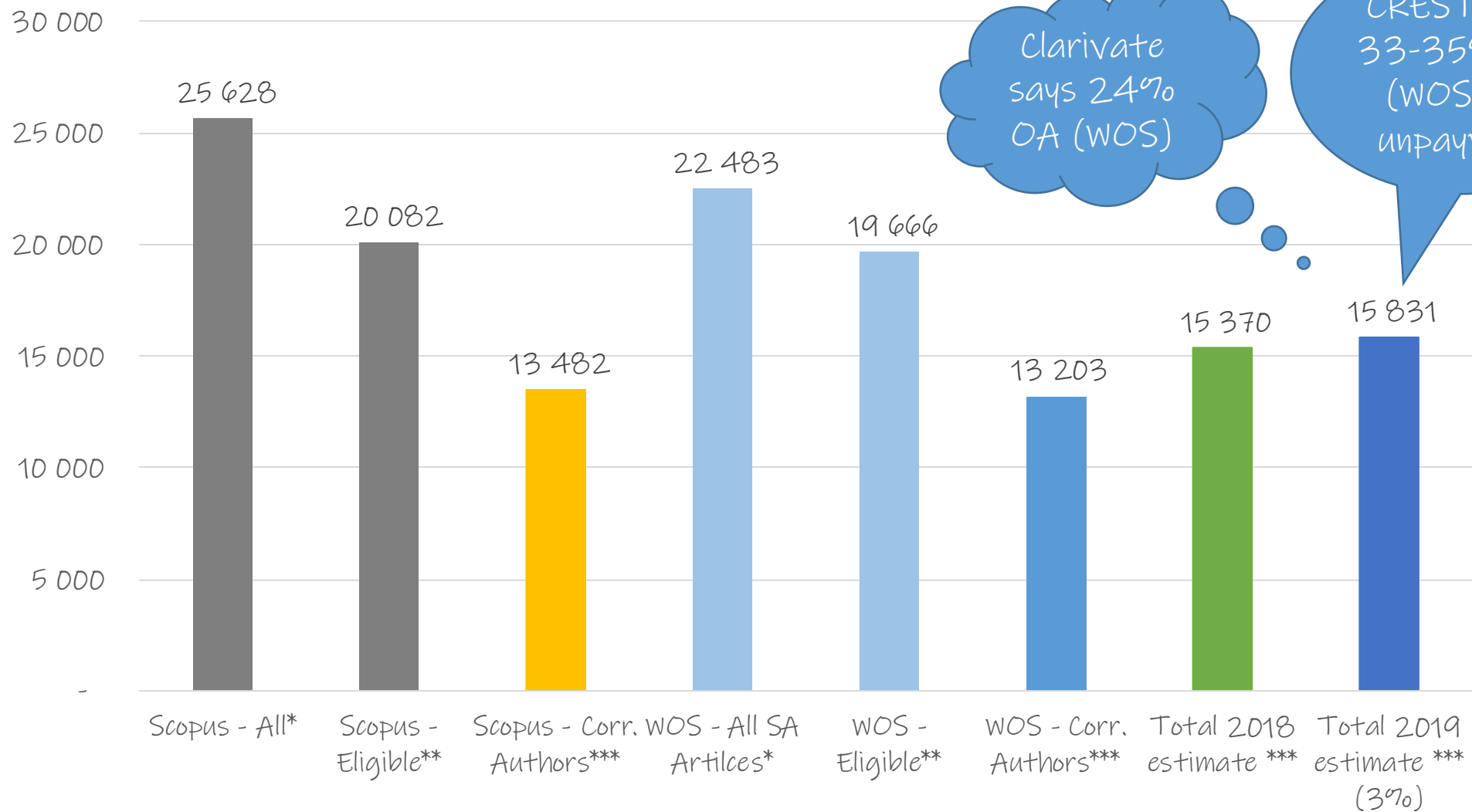
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# How Many Articles Does South Africa Publish each year (WOS data)?



Research Output Data -  
eligible articles with submitting corresponding authors affiliated to SA  
institutions



What are the right numbers to look at?

Key Assumptions for back-of-envelope calculations:

1. Not all SA research output is listed in WOS and Scopus  
- added 14%
2. Estimate for current gold OA publishing - 30%
3. Assume an average APC of R34,000 (€2,000)

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# How much does it cost?

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## Status Quo:

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- Subscriptions
  - SANLIC
  - Non-SANLIC
- Hybrid OA charges
  - APCs
  - Page, colour, graphs
- Pure Gold OA charges
  - APCs
  - Page, colour, graphs

= R717 438 175

Real cost/article = R45 319

## Transition:

Cost neutral

(transformational agreement)

- Publish and read fee (for closed and hybrid journals)
- Back file purchase fees
- Pure Gold OA charges
  - APCs
  - Page fees
  - Colour fees
  - Graph Fees

= R717 438 175

## Objective:

pay to publish only

- Pure Gold OA charges
  - APCs
  - Page fees
  - Colour fees
  - Graph Fees
- Remaining back file purchases

= R538 250 627

(25% less?)

Cost/article = R34 000  
(worst case)

# After the flip - all subscriptions

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## The Status Quo based on 2018/2019 data

Estimate of eligible articles with eligible SA authors (\*\*\*)  
2019 SANLIC subscriptions (Journals only)  
2019 non-SANLIC Subscriptions estimate (25%)  
Gold OA (30%?) articles estimate  
Gold OA (30%?) articles multiplied by average APC (R34 000)  
Total spend (subst+OA)  
Current cost per article

## Overall 2019

15 831  
R444 770 390  
R111 192 597  
4749  
R161 475 188  

---

R717 438 175  

---

R45 319

## After the Flip

Estimate of eligible articles with eligible SA authors (\*\*\*)  
Gold OA articles multiplied by average APC (R34 000)  
Total spend (OA only)  
Total spend reduction %  
Cost per article after the flip  
% of current Spend  
% of current SANLIC Subscription spend

## Overall 2019

15 831  
R538 250 627  

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R538 250 627  

---

25%  
R34 000  
75%  
121%

# After the flip - big five

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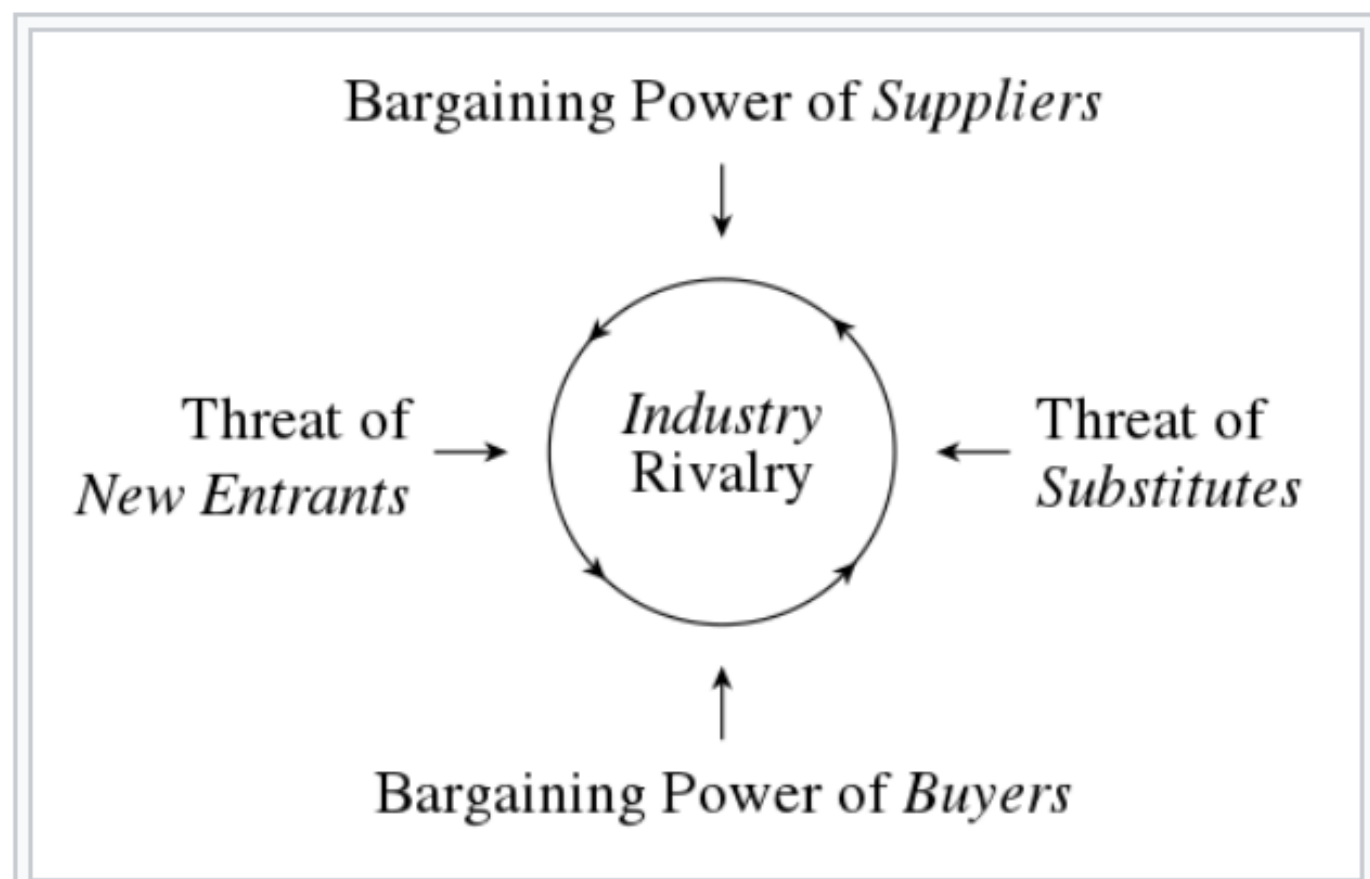
The Status Quo based on 2018/2019 data	Elsevier	T&F	Springer Nature	Wiley	SAGE	Total for 5
Estimate of eligible articles with eligible SA authors (***)	2 171	2 206	1 354	958	396	7 085
2019 SANLIC subscriptions (Journals only)	R165 218 741	R51 372 040	R53 705 880	R78 421 004	R16 782 638	R365 500 303
2019 non-SANLIC Subscriptions estimate (25%)	R33 043 748	R10 274 408	R10 741 176	R15 684 201	R3 356 528	R73 100 061
Gold OA (30%?) articles estimate	651	662	406	287	119	2126
Gold OA (30%?) articles multiplied by average APC (R34 000)	R21 503 760	R21 848 105	R13 405 712	R9 487 302	R3 918 410	R70 163 289
Total spend (subs+OA)	R219 766 249	R83 494 553	R77 852 768	R103 592 507	R24 057 576	R508 763 653
Current cost per article	R101 207	R37 845	R57 510	R108 131	R60 800	R71 807
After the Flip	Elsevier	T&F	Springer Nature	Wiley	SAGE	Total for 5
Estimate of eligible articles with eligible SA authors (***)	2 171	2 206	1 354	958	396	7 085
Gold OA articles multiplied by average APC (R34 000)	R73 829 575	R75 011 827	R46 026 279	R32 573 071	R13 453 208	R240 893 960
Total spend (OA only)	R73 829 575	R75 011 827	R46 026 279	R32 573 071	R13 453 208	R240 893 960
Total spend reduction %	66%	10.16%	41%	69%	44%	53%
Cost per article after the flip	R34 000	R34 000	R34 000	R34 000	R34 000	R34 000
% of current Spend	34%	90%	59%	31%	56%	47%
% of current SANLIC Subscription spend	45%	146%	86%	42%	80%	66%

# Porter's five forces analysis

From Wikipedia, the free encyclopedia

## Porter's Five Forces

**Framework** is a tool for analyzing competition of a business. It draws from industrial organization (IO) economics to derive five forces that determine the competitive intensity and, therefore, the attractiveness (or lack of it) of an industry in terms of its profitability. An "unattractive" industry is one in which the



A graphical representation of Porter's five forces

Data As Of:

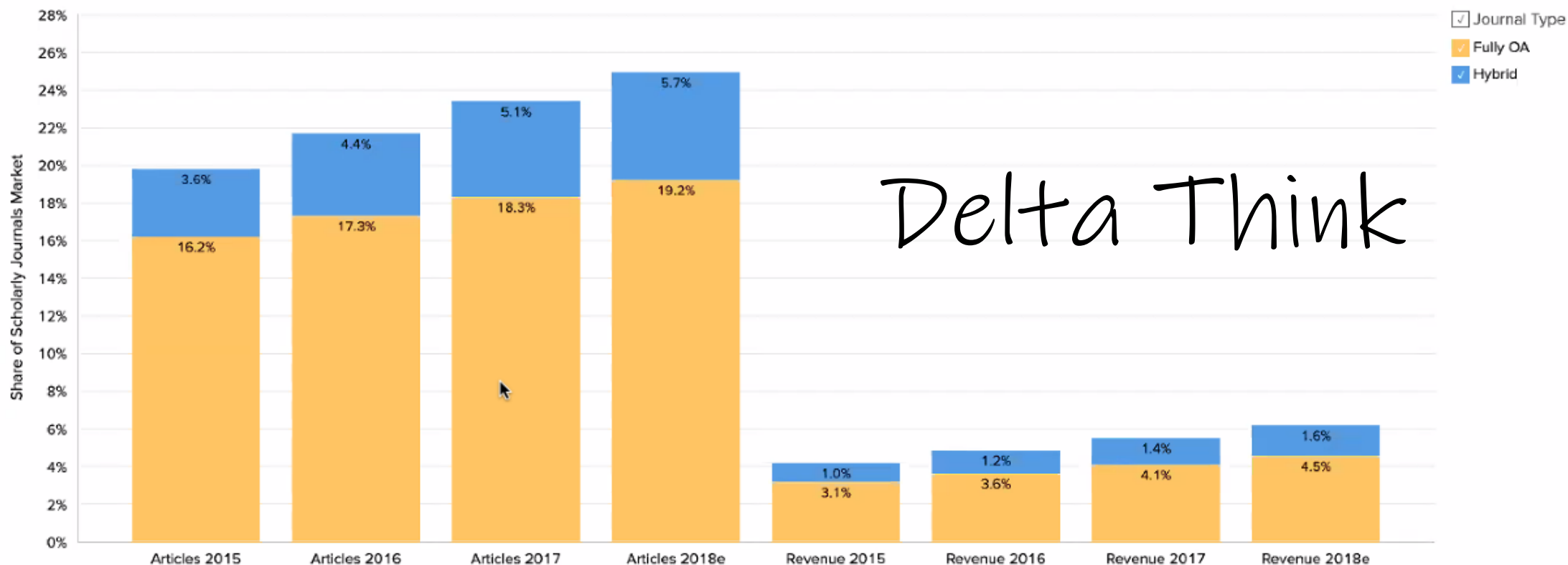
Year:

Scope:

Measure:

Show Proportions F...

2018 | 2015,2016,2017 | Total Market | All | Fully OA,Hybrid



Delta Think

Source: Delta Think analysis. © 2019 Delta Think, Inc. All rights reserved. May not be reused without permission

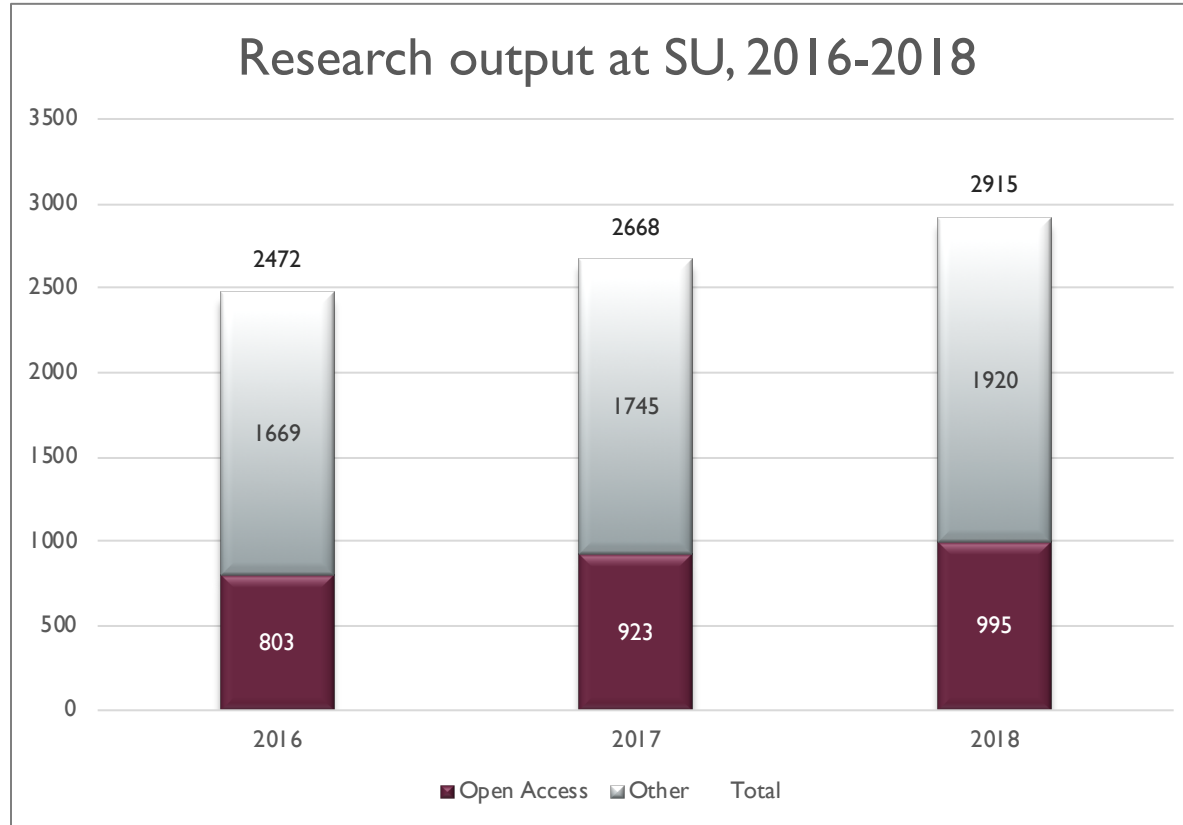
The [Size and Share page](#) analyzes how much of the market open access accounts for, and shows how it has a much greater share of volume than value.

- Current market dynamics point to the projected annual growth in open access (of both articles published and revenue) slowly reducing to a long term figure of approximately 10%.
- Revenue growth in OA is considerably faster than the low single-digit growth in the overall journals market.
- Hybrid accounted for around 21.8% of OA output in 2017 and 22.5% of OA value in 2017. Hybrid's previous strong growth rates appear to be slowing to match those of fully OA.
- Hybrid take-up varies by publisher and is dependent on the make-up of their individual portfolios.
- Widely quoted figures (cited in various reports published in the last few years) indicate that 20-23% of articles are published as OA in the current year, and about 50% to 55% of all articles are openly available. The difference is due to factors such as articles coming off embargo, being made publicly accessible, flipping from subscription to OA, and sponsored journals. (Note, there is a difference between Open Access – free of cost to access and of most licensing restrictions, and Public Access – free of cost, but maintaining more restrictive onward usage terms).

Growth rates of both fully OA and hybrid output and revenue are slowing. We explore this further in the page about [Growth Factors](#).

# Stellenbosch University as an example...

## Research output at Stellenbosch University



# Open Access support at Stellenbosch University

Total number and cost of articles funded per year since the inception of the SU Open Access Publication Fund		
Year	Number of articles funded	Total cost
2009	3	37 243
2010	14	168 686
2011	31	368 538
2012	56	570 091
2013	102	1 075 260
2014	81	964 218
2015	72	1 036 927
2016	92	1 466 420
2017 (50% funding by Library)	94	802 239
2018 (50% funding by Library)	125	1 610 710
2019 (50% funding by Library)	163	2 322 311
<b>Total</b>	<b>833</b>	<b>10 422 643</b>

# Open Access support at Stellenbosch University

<b>OAPF-funded articles on SUNScholar</b>			
<b>Number of articles funded in 2018</b>	<b>Number of articles uploaded to SUNScholar</b>	<b>Number of views</b>	<b>Number of downloads</b>
137	72	20 440	5 718

<b>SUNJournals</b>			
<b>Number of journals on SUNJournals</b>	<b>Number of contributions by SU authors in 2018</b>	<b>Number of visits to journal websites in 2017</b>	<b>Number of visits to journal websites in 2018</b>
25	97	263 279	384 613

# Stellenbosch University as an example (Wiley)

SU output in Wiley				
Year	Open Access	Hybrid	Non-OA	Total
2016	18	38	315	371
2017	36	26	274	336
2018	24	32	287	343

**Based on the Wiley/Projekt DEAL Publish and Read (PAR) fee**

**PAR fee = €2750**

**Access, archive and admin fee = €150**

**Total fee = €2900**

Possible Wiley/SU PAR deal in 2020	
* Number of articles (forecast for 2020)	350
* PAR fee (EUR2900 converted to USD)	USD 3 183
Total cost in USD	USD 1 114 050
<b>Total cost in Rand for 2020 @ R15/\$</b>	<b>R16 710 750</b>

Compared to SU Wiley subscription fee	
* Number of OA articles published in 2020 (guesstimate)	58
* Average APC for Wiley Open	USD 2 097
# Projected total cost of Wiley APCs in 2020 in USD	USD 121 626
# Cost of SU Wiley subs in 2020	USD 945 992
Total cost in USD	USD 1 067 618
<b>Total cost in Rand for 2020 @ R15/\$</b>	<b>R16 014 276</b>

# Stellenbosch University as an example (Elsevier)

SU output in Elsevier				
Year	Non-OA	Hybrid	Open Access	Total
2016	387	23	9	419
2017	397	41	23	461
2018	396	24	30	450

Possible Elsevier/SU PAR deal in 2020	
* Number of articles (forecast for 2020)	460
* Average APC for Elsevier	USD 3 700
Total cost in USD	USD 1 702 000
<b>Total cost in Rand for 2020 @ R15/\$</b>	<b>R25 530 000</b>

Compared to SU Elsevier subscription fee	
* Number of OA articles published in 2020 (guesstimate)	50
* Average APC for Elsevier	USD 3 700
# Projected total cost of Elsevier APCs in 2020 in USD	USD 185 000
# Cost of SU Elsevier subs in 2020	USD 1 612 962
Total cost in USD	USD 1 797 962
<b>Total cost in Rand for 2020 @ R15/\$</b>	<b>R26 969 430</b>

# Stellenbosch University as an example (Taylor & Francis)

SU output in Taylor & Francis			
Year	Open Access	Non-OA	Total
2016	13	119	132
2017	12	114	126
2018	14	109	123

**Based on the Wiley/Projekt DEAL Publish and Read (PAR) fee**

**PAR fee = €2750**

**Access, archive and admin fee = €150**

**Total fee = €2900**

Possible Taylor & Francis / SU PAR deal	
* Number of articles (forecast for 2020)	125
* PAR fee (EUR2900 converted to USD)	USD 3 183
Total cost in USD	397 875
<b>Total cost in Rand for 2020 @ R15/\$</b>	<b>R5 968 125</b>

Compared to SU Taylor & Francis (T&F) subscription fee	
* Number of OA articles published in 2020 (guesstimate)	13
* Average APC for T&F	USD 835
# Projected total cost of T&F APCs in 2020 in USD	USD 10 855
# Cost of SU Wiley subs in 2020	USD 392 808
Total cost in USD	USD 403 663
<b>Total cost in Rand for 2020 @ R15/\$</b>	<b>R6 054 941</b>

# Stellenbosch University as an example (CUP)

SU output in CUP				
Year	Non-OA	Hybrid	OA	Total
2016	0	13	1	14
2017	0	6	1	7
2018	6	15	1	22

Possible CUP/SU RAP deal in 2020	
* Number of articles (forecast for 2020)	20
* RAP fee (USD2 097 - 30%)	USD 1 468
Total cost in USD	USD 29 358
<b>Total cost in Rand for 2020 @ R15/\$</b>	<b>R440 370</b>

*Based on the Univ of California example where a 30% discount will be applied to the APC for every article published by a UC corresponding author*

Compared to SU CUP subscription fee	
* Number of OA articles published in 2020 (guesstimate)	16
* Average APC for CUP	USD 2 097
# Projected total cost of CUP APCs in 2020 in USD	USD 33 552
# Cost of SU CUP subs in 2020	USD 68 096
Total cost in USD	USD 101 648
<b>Total cost in Rand for 2020 @ R15/\$</b>	<b>R1 524 720</b>

# ***Implications of transformative agreements and beyond for South Africa - Impact***

- Globally, everybody will benefit from improved access to scholarly material
- Transformative agreements will not reduce costs for the top research-producing institutions, but they probably have the means to move around funds
- Institutions with low research output will benefit from reduced costs
- Big publishers will continue to benefit
- Transformative agreements viewed as the most promising model, but what happens thereafter
- Guard against risk of one size fits all approach, especially if driven by commercial publishers

# ***Implications of transformative agreements and beyond for South Africa – Equity/Social justice***

- Will not address the deep knowledge gap between developed and developing nations
- Visibility of global research for researchers who cannot afford to participate at risk
- How will a pay-to-publish model impact on the already low research output of the African continent?
- Will publishing become a privilege for those who can afford to do so?
- Will those who cannot afford to publish, be driven to publish in predatory journals?
- Will they publish even less and in the process become even more marginalised?
- We need a system/mechanism that ensures that people without the means to pay to publish are not disadvantaged.

# Concluding remarks

- The benefits of openness to scientific integrity and innovation in the public interest widely acknowledged
- Significant lack of awareness of what OA and APCs are or mean in the research community
- Desired route to open access is variable by funder, geography and discipline
- Need to navigate multiple open access models for some time
- Impact on research intensive institutions paying for the majority of article publishing
- The burden on those generating the most research output intensifies

# ***BUT..... (some challenging comments)***

- What is a fair APC?
- Who decides what is fair and sustainable for Africa and other low- to middle-income countries?

## ***10 years down the line***

- Will everything be open?
- At what price?
- Are the same publishers making the same profits?
- Have we removed the paywall – or just moved it?

# *John Measey*

- “A paywall is never acceptable wherever you put it”
- “Any paywall, whether it be high, or ‘considerably lower’, is a wall that excludes many researchers, certainly from developing countries”
- “Our energies would be better spent demolishing the paywall”
- A completely new publishing model is needed
- Solution proposed by Measey is that learned academic societies to come to agreements directly with university libraries
- A call for real Open Access – no paywalls for anyone!

Dankie  
Thank you  
Enkosi



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