

# The DEAL Cost Modeling Tool

A practical contribution for evaluating the impact and costs of transformative open access publishing agreements

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OPERATIONS



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## Downloads

- >> [DEAL Cost Modeling Tool - Wiley](#)
- >> [DEAL Cost Modeling Tool - Springer Nature](#)
- >> [First steps with the DEAL Cost Modeling Tool](#)

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## ABSTRACT

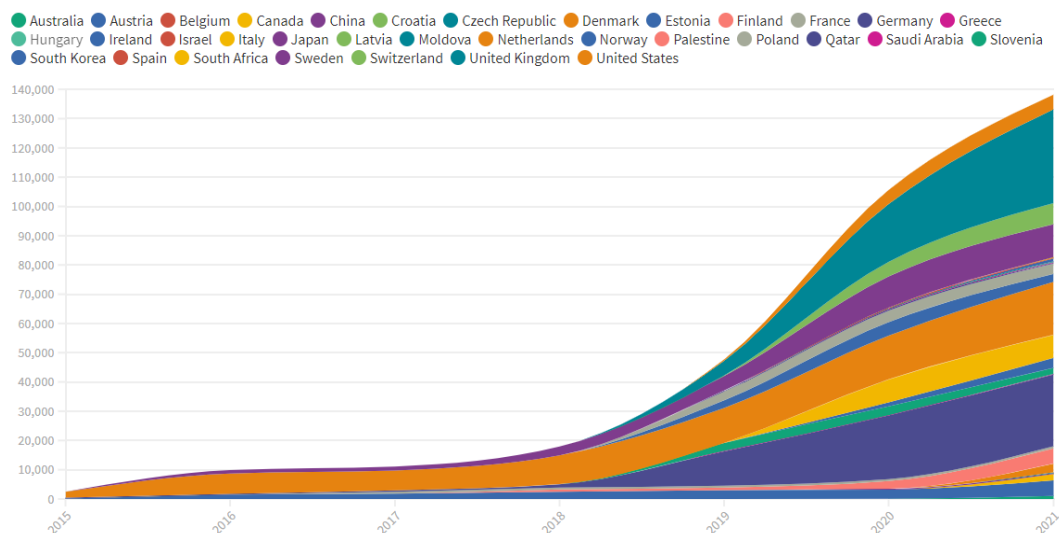
The DEAL Cost Modeling Tool is a practical tool that gives German research institutions the ability to calculate their medium-term expenditure development with the publishers Wiley and Springer Nature under various assumptions and compare these with the actual costs of the DEAL agreements. The interactive Excel tool, which is equipped with a wide range of input and modeling options, incorporates publication and financial data from Germany from the years prior to the DEAL contracts and a robust methodology to generate projections that illustrate potential cost developments under a selection of relevant scenarios. Anchored in the validated article-level cost data generated through the DEAL agreements, the DEAL Cost Modeling Tool makes a practical contribution to the discourse on evaluation of impact and costs associated with transformative open access publishing agreements as they proliferate globally, prompted by consensus around the OA2020 Initiative and widely documented in the ESAC Registry.

# 1 The role and challenge of transformative agreements

The days of subscriptions as the dominant business model in the business relationship between scholarly publishers and academic libraries seem to be numbered. With researchers publishing the vast proportion of their research articles in scholarly journals that are funded through subscription fees, the scholarly journal, as such, seems to be thriving in its relevance for research communities, yet there is a growing realization that the distribution conditions of journals which persist today, left over from the print age, are the fundamental barrier that impedes the potential of research from coming to full fruition under the conditions enabled by our digital age. A systematic restructuring of business models around the digital transformation, which has already been completed in virtually all other industry sectors, has only just begun in academic publishing. The goal here is clear: there must no longer be a paywall barrier to access research, authors must retain the right to use, share and re-use their peer-reviewed articles, the costs required to finance the scholarly journals valued by researchers must be identified and organized on the production side. Scholarly communication is, after all, an integral part of the research process, itself.

The long-standing demand of the scientific community for open access must finally be implemented on a large scale, and the scholarly journals operating with subscription paywalls must transition to open access with appropriate business models. The burden must be taken off the shoulders of the recipients and shifted to the side of the producers. This inevitably involves changes and shifts in the organization and financing of the entire scholarly publishing system. The funds to achieve this already exist; the collection and acquisition budgets of libraries are currently supporting the paywall through subscription fees and must be re-organized. Instead of paying for reading, as in the past, these funds can be reallocated as funds for open access publishing services and repurposed accordingly. The international OA2020 Initiative first began promoting these objectives and corresponding approaches in 2016 and has since garnered the consensus of representatives of the research community from all continents.<sup>1</sup>

From this strategic and organizational network, the approach of transformative open access publishing agreements has emerged and has been validated by the community.<sup>2</sup> Transformative agreements have seen tremendous growth in recent years and are now rightly considered the most promising and impactful approach to reach the ultimate breakthrough of open access on a large scale in scholarly publishing.<sup>3</sup> The data visualizations of the ESAC Market Watch<sup>4</sup> leave no room for doubt that transformative agreements can be used to decisively increase the proportion of openly available



Source: [ESAC Transformative Agreement Registry](#). • Click on a country to filter.  
Last updated: 28-06-2021

**Figure 1**

This visualization from the ESAC Market Watch shows the increase in articles published open access in hybrid journals under the controlled setting of transformative agreements negotiated in various countries, as documented in the ESAC Registry.<sup>5</sup>

articles in what are, now, subscription-based journal portfolios, and that this delta of open access is an entry point into an accelerated stage of transformation that is recognized by publishers and libraries alike. Transformative agreements have the historic mission of forming a hybrid bridge between the past and the future. As such, they are not the endpoint of evolution in scholarly communication, nor are they a new normal in publisher-institution relations; rather they are a temporary, intermediate stage—an inevitable transitional phenomenon, so to speak.

This new, transitional mode of contracting with publishers not only generates a higher proportion of open access to research with more effectiveness, but it also changes the commercial arrangements between publishers and libraries. At the root of the current transformative open access negotiations with publishers is the redirection of current financial flows away from the outdated structure and logic of subscriptions and towards models, complete with new processes and workflows,<sup>6</sup> based on open access publishing services. The aim is to systematically withdraw money—and the implicit legitimation that comes with it—from the conventional subscription system and to reinvest the saved funds in future-oriented publication services instead.

In the research system in Germany, the two active DEAL agreements with Wiley<sup>7</sup> (since 2019) and Springer Nature<sup>8</sup> (since 2020), in particular, embody this approach. In both cases, the contracts still stand on the foundation of subscriptions to a certain extent, as the entity of costs are a reflection of the previous subscription expenditure. At the same time, they introduce a systematic orientation toward open dissemination of research and a transparent, 1:1 article-level cost model. DEAL's "Publish and Read (PAR)" model<sup>9</sup> dismantles former lump-sum subscription fees to allow funds to follow

researchers, covering costs for open access publishing of their articles with article-level accounting. By no means a final solution, the agreements, in this way, initiate the fundamental restructuring of funding streams, organizational processes, and workflows that are necessary to support an open scholarly communication system, building a hybrid bridge from the print-based paradigm of subscriptions toward a digital paradigm of the 21st century.

Proportionally to the spread of transformative agreements across more and more countries and regions, the debate about this approach is also becoming more intense. Almost everywhere, the discussion focuses on the question of how costs will develop and how they will be distributed under the new paradigm. This is, of course, the essence of working through such a transition, as the entity of former expenditures for providing reading access to researchers may be entirely disproportionate to the costs of providing them with open access publishing services. Research-intensive institutions with a high publishing output, in particular, often see an increase in costs coming their way that cannot be met solely with the library subscription funds that have been spent to date. Even though there may be enough money in the overall system to support open access publishing of the current corpus of subscription-based journals, it is not necessarily available everywhere it is needed. That is why analyses and discussions are being conducted in many countries on how costs under a publication-based accounting system can be redistributed in a fair and workable way.<sup>10,11</sup>

The same analyses and discussions are occurring among participants in the OA2020 Initiative on an international scale, to determine principles and mechanisms that ensure an equitable redistribution of the costs of scholarly journal publishing among high-research investment/high-output countries and countries with a proportionally smaller investment/output.<sup>12</sup> At whatever level, cost redistribution is a challenge that must be addressed, but such discussions are only possible from the new vantage point gained through transformative agreements, which transparently articulate costs for scholarly publishing in a way that can be compared. The community will be in a better position to find the right solutions only if it is fully informed of the financial streams currently flowing, and each new agreement sheds light on the gross financial inequities that characterize the subscription-based system.

## 2 The DEAL Cost Modeling Tool and its approach

The DEAL Cost Modeling Tool presented here has been developed against the backdrop of the experiences in Germany with the two major nationwide transformative agreements negotiated by Projekt DEAL.<sup>13</sup> It aims to bring more insight into the publication and cost developments behind the DEAL contracts, through sound data and a robust methodology, and to enable each institution to calculate its medium-term expenditure development with the publishers Wiley and Springer Nature under different assumptions in order to compare these with their actual DEAL contract costs.

The DEAL Cost Modeling Tool is an interactive Excel-based tool, presented by MPDL Services GmbH, that not only incorporates publication data and subscription expenditure data from Germany from the years prior to the DEAL contracts, but also provides concrete cost information on what was spent on hybrid publications and pure open access publications in the same period. These values can be used to track the development of publishing and costs and generate projections for the coming years, based on observed trends, which can be modeled in several scenarios and compared with the actual costs under the DEAL agreements (the Tool processes figures from 2015-2025). The Tool is interactive in that each institution has the option to enter its own numbers and set up basic assumptions as operators, or rely on the Tool's automatic calculations, explained in detail in the Tool Methodology. At the center of the data entry and all calculations are the year-end statements of final article tallies and relative PAR fees ("publikationsanzahlbasierte Abrechnung" or "PABA") that each institution participating in the contracts received from MPDL Services GmbH, the operating entity of the agreements. These are the consumption values for the year 2020 validated by the contract partners and thus the most complete and objective data points available, in terms of publication count and cost under the DEAL agreements.

The DEAL Cost Modeling Tool is presented in a separate instance for each publisher contracted, Wiley and Springer Nature. In addition, there are parallel language versions in German and English.

The DEAL Cost Modeling Tool is one of the community's efforts to document and quantify the "total costs of publishing".<sup>14</sup> Behind this approach is the attempt by libraries to capture not only their own institution's subscription expenditures, but also to determine what other payments are flowing through their institutions and out to



publishers for publication costs. While previous library subscription fees are known, the entity of investments in open access publishing of articles (APCs) before the DEAL agreements is, in most cases, unknown, as publishing trends of authors were not previously tracked and payments were largely made outside of central oversight. The DEAL Cost Modeling Tool helps to make these costs visible and to include them in the overall picture.

Overall, the DEAL Cost Modeling Tool makes it easier for individual institutions to

- gain insight into the publishing trends of their authors,
- benchmark the entity of previously hidden open access publishing costs,
- calculate the immediate financial impact of DEAL's publication-based costs and compare these with other cost scenarios,
- forecast long-term savings, or funding requirements, to support the needs of their scholars, in the transition of scholarly publishing to open access.

To create realistic, data-driven projections, the Tool is based on industry-standard sources and analyzes annual article output, APC pricing information, and subscription fees at the national level over multiple years using a transparently documented methodology. The respective growth rates are calculated and automatically applied to the institution's reference figures (article tallies and costs under the DEAL agreements) to produce informed estimates of past and future institutional publication trends and total costs. The resulting trend lines are displayed in a series of scenarios. All cost projections displayed can be printed and downloaded for further use in budget deliberations with institutional stakeholders. This is intended to facilitate the evaluation of potential savings or necessary shifts in funding to further support the transition to open access promoted by DEAL.

The DEAL Cost Modeling Tool is intended to enable institutions and political bodies to engage in an informed dialogue about future cost trends in the transition from the current subscription system to an open access publishing system, relying on a consistent framework of baseline data and modeling capabilities. The Tool's approach, methodology, functionality, as well as the limitations are described in much more detail in the Tool itself.

## 3 Findings and insights gained through the DEAL Cost Modeling Tool

DEAL Cost Modeling Tool offers a wide range of input and visualization options, making the development of publishing trends and costs associated with scholarly publishing more transparent and comprehensible than ever before. While its original purpose is to give institutions greater insight into their own publishing and cost trends, the data collected and analyzed in the tool provide the opportunity to observe some more general trends. Some high-level insights gleaned through the tool are highlighted here.

### 3a The consequential growth dynamics in open access publishing

For some years now, reports from market analysts and from the publishers themselves have indicated that growth rates in open access publishing are particularly high, and by no means in the domain of pure open access journals alone, but also in hybrid journals.<sup>15</sup> The annual growth rates in open access publishing far outpaces the overall annual growth in total publications. In the DEAL Cost Modeling Tool, these trends can clearly be observed with regard to article output from Germany in Wiley and Springer Nature journals:

- In the case of Springer Nature journals, the average annual open access article growth rate in the years prior to the DEAL agreement for publications from Germany is 6.7% in open access journals and 17.0% in hybrid journals, whereas the total number of publications from Germany grew by only 0.7% in the same period.<sup>16</sup>
- In the case of Wiley journals, the average annual open access article growth rate in the years prior to the DEAL agreement for publications from Germany is as high as 21.1% in open access journals and 23.6% in hybrid journals, whereas the total number of publications from Germany grew by only 2.3% in the same period.

On the one hand, the trends show that there is a clear demand for open access publishing options among authors, which was not triggered merely by the DEAL agreements, but which can already be observed in previous years. On the other hand, this also proves that open access is a manifest cost factor that institutions can no longer ignore. Just because certain payment streams are not currently handled by the library does not mean they do not exist. Open access publishing, in all its facets and

well beyond the DEAL agreements, is a fact of life in the relationship between research institutions and scholarly publishers. All indicators strongly suggest that research institutions need to establish a framework in which they can regulate their costs and strategic interests in a holistic way. Looking strategically at current subscription fees alone, leaving the other financial streams to run wild does not do justice to the complexity of the current scenario nor to the needs of researchers as authors. All costs related to scholarly publishing must be thought through and addressed with a comprehensive strategy.

### 3b Eliminating costs of hybrid publishing once and for all

The significant growth in open access publishing described above has an impact on publisher revenues, at the expense of research institutions. This is particularly critical in the case of expenditure on hybrid articles, because here the publishers are collecting twice - once via subscription fees and then again in open access publishing fees (APCs) for each individual article published openly. The costs involved are by no means negligible and are rising rapidly, as documented in the DEAL Cost Modeling Tool:

- In the case of Springer Nature journals, costs for hybrid open access publishing of articles from Germany show an average annual growth rate of 21.5% in the years prior to the DEAL contracts and amount to around EUR 2.4 million in 2019 – the year prior to the start of the DEAL contract. Without a DEAL contract and with the previous growth continuing at the same rate as in the last 4 years, this duplicate payment stream would be expected to grow to exceed EUR 6 million by 2025. These are funds that flow through institutions outside the central oversight of libraries.
- In the case of Wiley journals, costs for hybrid open access publishing of articles from Germany show an average annual growth rate of 27.4% in the years prior to the DEAL contracts and amount to just over EUR 1.7 million in 2018 – the year prior to the start of the DEAL contract. Without a DEAL contract and with the previous growth continuing at the same rate as in the last 4 years, this duplicate payment stream would be expected to grow to exceed EUR 8 million by 2025. Again, these are funds that flow through institutions outside the central oversight of libraries.

The rationale and great strength of transformative agreements is that the holistic agreement structure, covering both reading and open access publishing, neutralizes and eliminates the duplicate expenditure in hybrid open access publishing fees. In this respect, the two DEAL agreements present a positive balance simply because additional costs for hybrid publishing have been reined in and the associated cost risk has been eliminated. Not only have the DEAL agreements proven to be effective in

avoiding the substantial and otherwise rapidly increasing costs in hybrid publishing, they provide the framework to look at costs holistically and not limit cost reduction efforts only to the subscription side of publisher relations. The DEAL Cost Modeling Tool give institutions the ability to see the whole picture and model costs based on different scenarios.

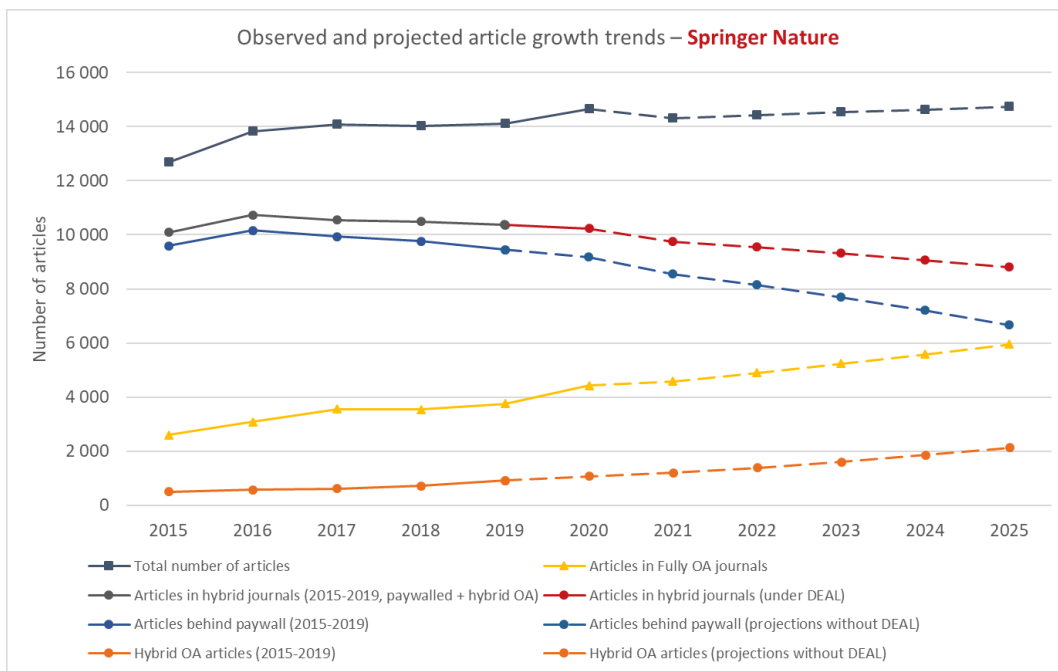
### 3c The surprising, intrinsic cost-containing effect of the DEAL agreements

The definitive elimination of duplicate spending on hybrid open access publishing is one strength of the DEAL contracts. Another positive effect is less easy to see and requires a closer look into the data and modeling of the DEAL Cost Modeling Tool. What is striking about the cost projections generated by the Tool is that the DEAL agreement cost trend line is relatively flat, even though article growth figures are applied in the Tool's calculations. So, one may ask: Why do the overall DEAL costs remain stable considering the current article growth rates?

The reason for this lies in the particular composition of article growth in Germany in journals covered by the agreement, which is as follows for the two publishers:

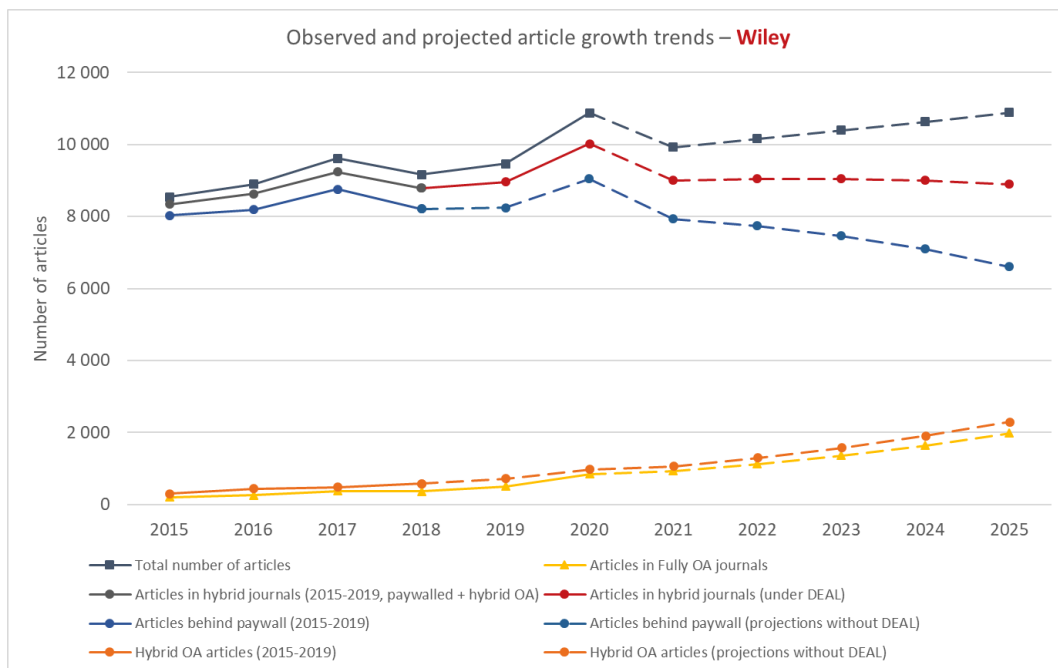
- In the case of Springer Nature journals, the proportion of articles published in pure open access journals covered under the agreement in relation to the total volume is around 30%, with an average annual growth rate of 6%.
- In the case of Wiley journals, the proportion of articles published in pure open access journals covered under the agreement in relation to the total volume is still just under 10%, but is catching up with an average annual growth rate of almost 20%.

Since articles in fully open access journals grow at a higher rate than the overall growth of articles, they essentially reduce the number of articles published in journals operating under a hybrid business model. Consequently, there is a proportionate shift from open access publishing in hybrid journals to publishing in pure open access journals. These relationships can be seen as follows:



**Figure 2**

This chart shows the article development and article distribution from Germany in Springer Nature journals over the period 2015-2025 against the backdrop of the DEAL agreement. The strong growth of articles in pure open access journals is clearly visible. As a result, the shares of publications in hybrid and pure open access journals are already changing in the years before the DEAL agreement. The effect of this development on costs of the DEAL agreement is that fewer and fewer hybrid PAR fees are being billed, in favor of a steadily growing number of OA gold APCs.

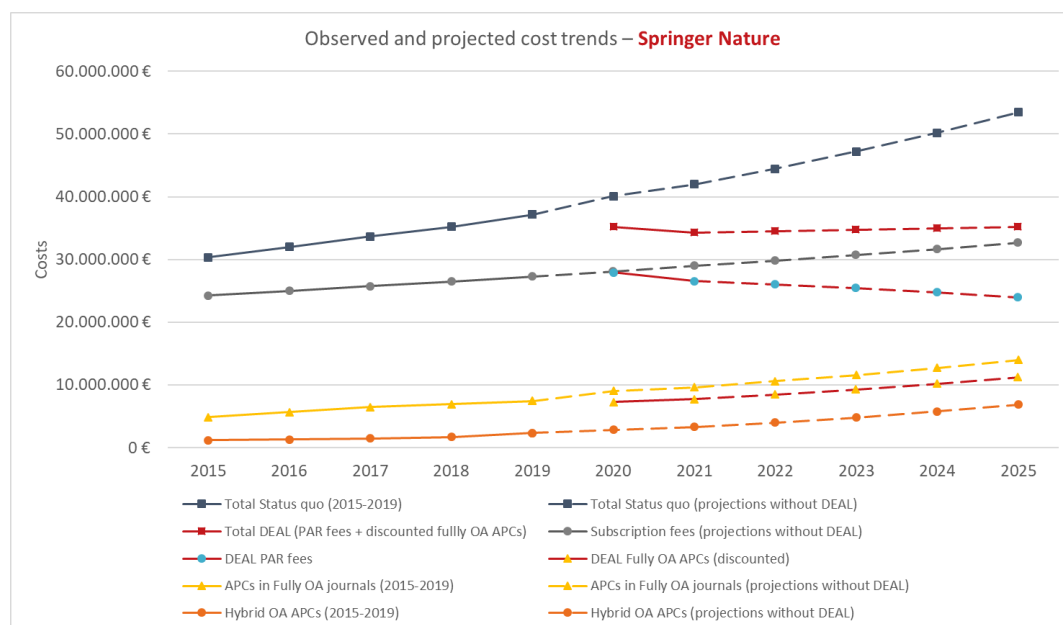


**Figure 3**

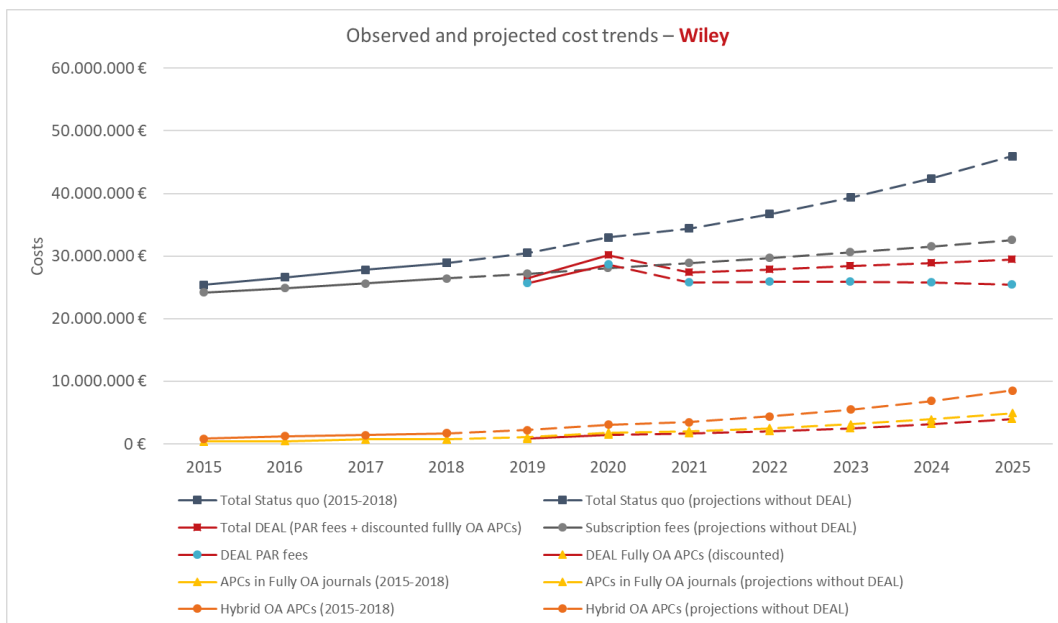
This chart shows the article development and article distribution from Germany in Wiley journals over the period 2015-2025 against the backdrop of the DEAL agreement. Here, too, the strong growth of articles in pure open access journals is clearly visible. As a result, the shares of publications in hybrid and pure open access journals are already changing in the years before the DEAL agreement. The effect of this development on costs of the DEAL agreement is that fewer and fewer hybrid PAR fees are being billed in favor of a steadily growing number of OA gold APCs.

In the case of the DEAL agreement, this shift of articles from hybrid to gold, as shown above, has an overall cost-reducing effect. As repeatedly documented over the years,<sup>17,18</sup> the cost structure for pure open access publishing (Gold) is significantly more favorable for authors and their institutions than for hybrid articles. The methodology of the DEAL Cost Modeling Tool breaks this down to reveal that the average annual APC price point of pure open access journals is significantly below the level of hybrid journals. Given the trend indicators, this difference has a beneficial effect on DEAL’s overall costs—a benefit that is further reinforced by the additional discounts on APCs of pure open access journals secured in the agreement.

This shift toward a more favorable cost structure is expected to keep DEAL’s overall contract cost trends largely flat, despite article growth, as illustrated in the projections below:



**Figure 4**  
This chart shows how article development and article distribution from Germany in Springer Nature journals affect the development of costs under different scenarios. The effects of shifting from hybrid to pure open access described in the discussion result in total costs remaining stable under the DEAL agreement (red line) despite projected article growth.



**Figure 5**  
This chart shows how article development and article distribution from Germany in Wiley journals affect the development of costs under different scenarios. The effects of shifting from hybrid to pure open access described in the discussion result in total costs remaining stable under the DEAL agreement (red line) despite projected article growth.

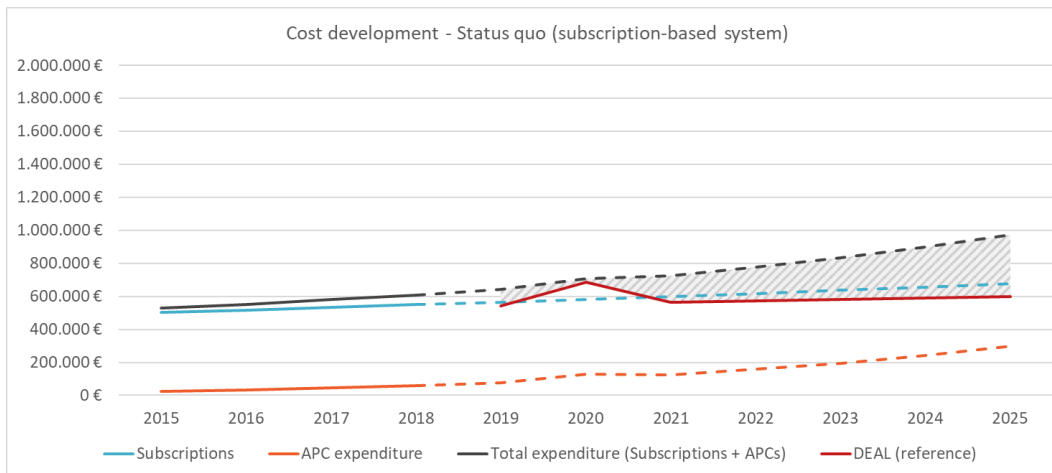
### 3d The special year 2020

2020 is the year of the COVID-19 pandemic, but this did not stop the advancement of science or scholarly communication. Across the publishing industry, it has been observed that conditions in the landscape led to a significant increase in publications.<sup>19</sup> It is reasonable to assume that the lockdown in Spring 2020, when the usual hustle and bustle of teaching, research and conferences came to a sudden halt, gave scientists more time to write. In addition, the intensification of coronavirus-related research, in particular, led to an increase in related publications. This development is not specific to Germany, but certain effects can be seen in the performance of the two DEAL contracts.

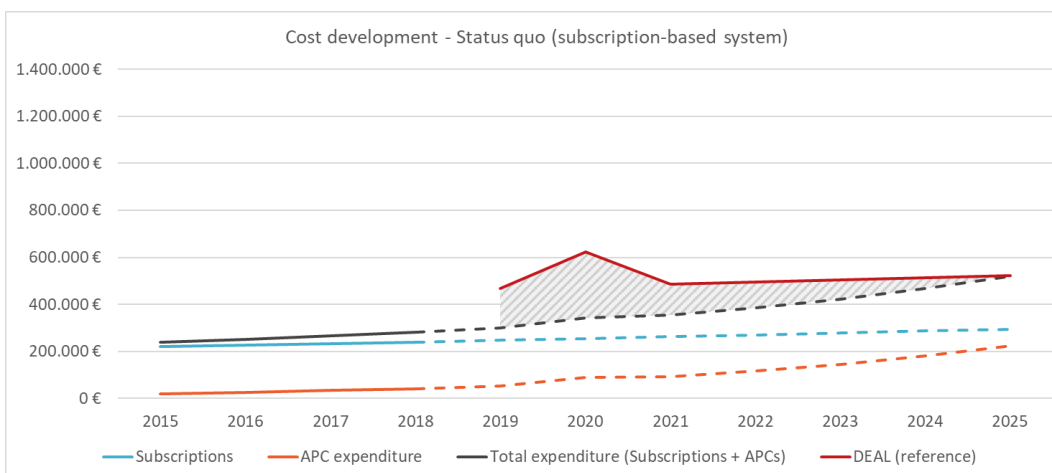
Since the DEAL contract with Wiley began in 2019, concrete comparative figures from before the pandemic are available. It is noticeable that the actual DEAL publication numbers in the first year of the contract, 2019, followed those of the Tool’s projections pretty closely; publication data for 2019 bears no deviation from the trend observed based on previous years. Article growth did not start until 2020 which presented a significant upward swing. As outlined in the Tool itself, a return to the general trend is more likely in the coming years. There is currently no evidence that the COVID-19 “bump” has shifted the trend line upward on a new trajectory. Therefore the Tool’s projections assume a return to the normal growth rate of articles observed in the 4 years prior to the agreements.

Below are two examples of institutions with a strong biomedical research profile where

coronavirus research could explain the upward shift:



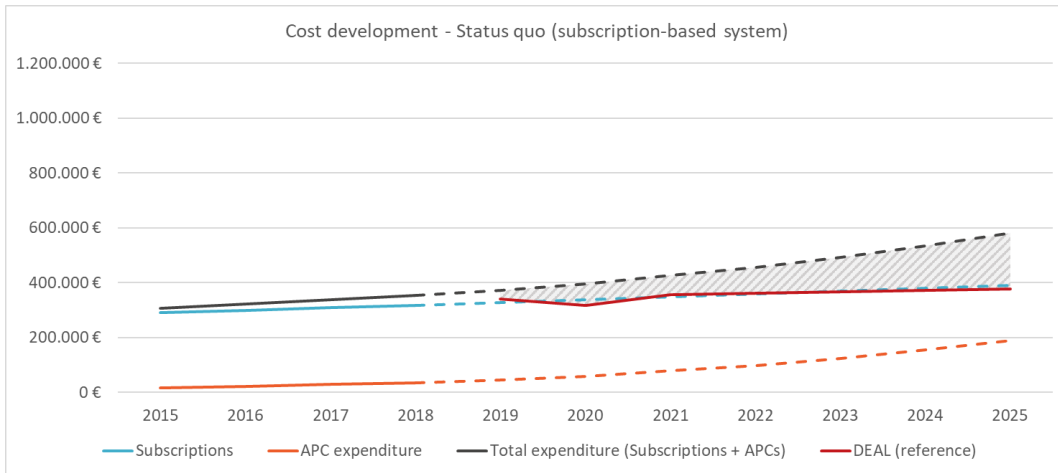
**Figure 6**  
The chart shows the projected publication trend of one institution with a strong biomedical research profile that participates in the DEAL contract with Wiley. The data points on the red (DEAL) line are the Institution's actual, validated DEAL costs for 2019 and 2020. An increase in publications can be seen in 2020 with respect to 2019. From 2021 onwards, the trend is assumed to return to normal as determined by publication trends in the 4 years prior to the start of the contract.



**Figure 7**  
Description as in Figure 6. Here, the same increase in publications can be observed in the activity of another DEAL institution; only the relationship to total costs differs.

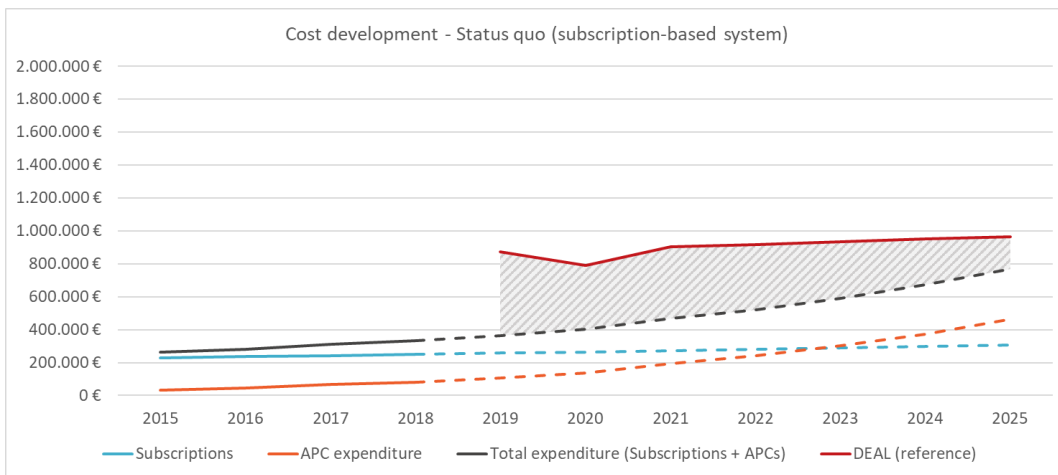
However, the picture of the effects of the lockdown is by no means uniform. The DEAL Cost Modeling Tool also shows that the increase in publishing output does not extend to all disciplines. In some disciplines, the lockdown is also likely responsible for the fact that not all research could be conducted as planned. In particular, declining trends at locations with a pronounced focus on technology and engineering, are evident as the following graphs illustrate:





**Figure 8**

The chart shows the projected publication trend with Wiley of one DEAL institution that is characterized by its technical research focus. The data points on the red line are the institution's actual, validated DEAL costs for 2019 and 2020. A decrease in publications can be seen in 2020 with respect to 2019. Starting in 2021, the trend is assumed to return to normal as determined by publication trends in the 4 years prior to the start of the contract.



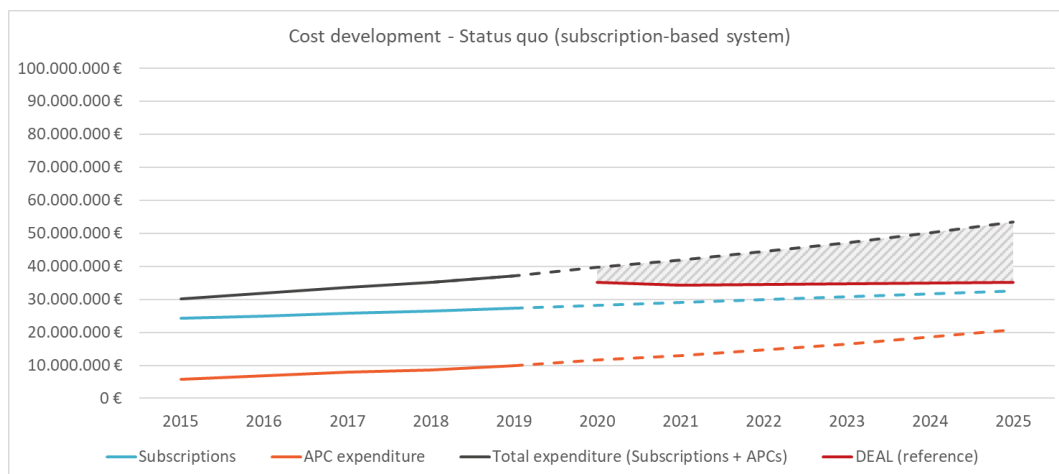
**Figure 9**

Description as in Figure 8 – Here, the same drop in publications can be observed in the activity of another DEAL institution; only the relationship to total costs differs.

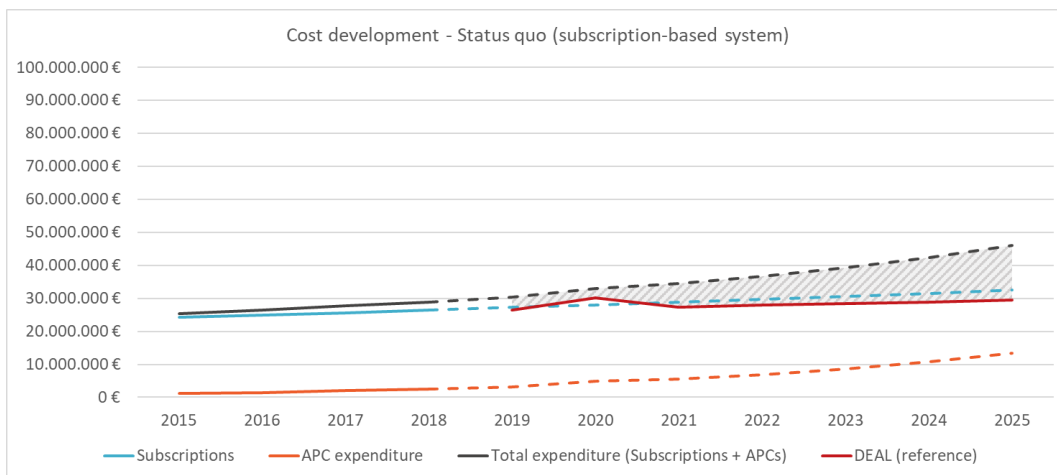
### 3e Macro and micro perspectives

The DEAL Cost Modeling Tool offers various visualization options for different aggregations of data in the Tool’s projection tabs. It is possible to choose between visualizations at the federal level, at the state level, and at the individual institution level. This means that each institution can use the tool to generate their own cost projections and, at the same time, have the corresponding values displayed at a higher level (state or national) for comparison. The parameters selected by users in the Tool’s settings are automatically applied to all views, so that micro and macro perspectives can be conveniently compared in all scenarios.

This is particularly important because conditions are, of course, not the same everywhere. At the higher aggregate levels—primarily at the national level, but typically also at the state level—the DEAL Cost Modeling Tool provides fairly clear evidence that, on the whole in Germany, there is enough money already in the system (subscription investments) to sustain open access publishing of German article output,<sup>20</sup> and that both DEAL agreements are having a cost-containing effect across the board. From this perspective, DEAL’s clear economic benefits are compelling. Securing greater value and service for less money overall can hardly be viewed as anything but positive. Reflecting on the science system in Germany as a whole, it is hard to deny that the DEAL approach has proven its worth and, looking forward, continues to be the most sensible approach from a financial perspective. This is expressed quite clearly in the following two charts, which are taken from the overall nationwide projections of the tool.

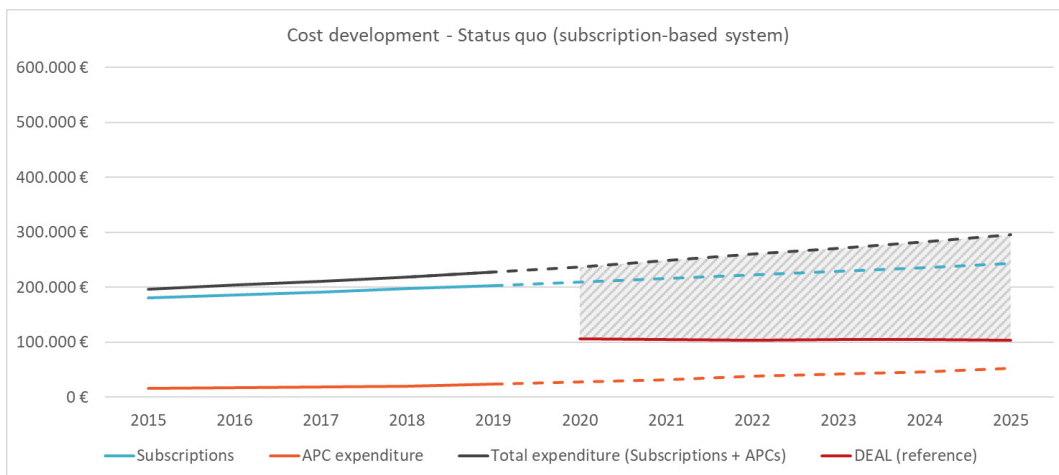


**Figure 10**  
 Projected cost development of the DEAL agreement with Springer Nature compared to the cost development under conventional conditions of the subscription-based system: The development of total costs of the DEAL agreement at the national level for Germany are shown in the red line. The black line represents the total expenditure that would be expected without a DEAL agreement for subscriptions and with open access fees (gold and hybrid) paid on a decentralized basis. The shaded area shows the costs avoided through the DEAL agreements.

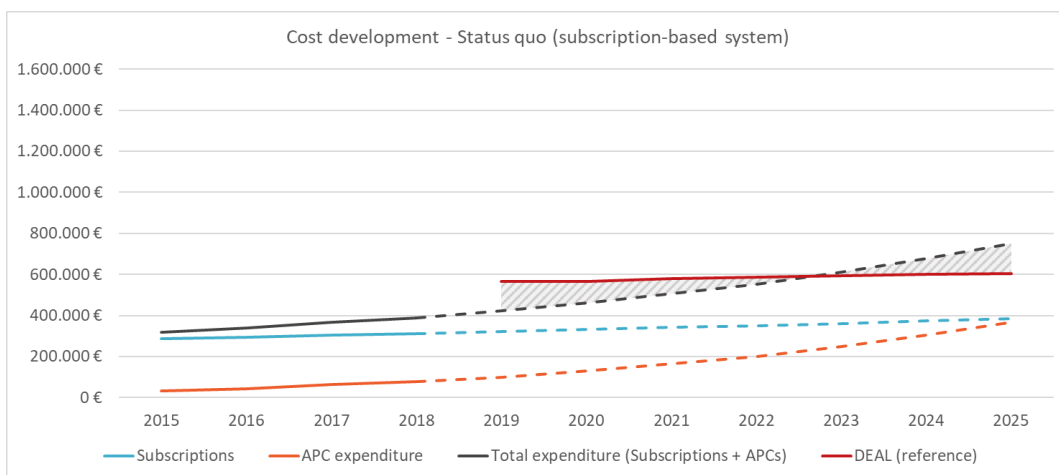


**Figure 11**  
 Projected cost development of the DEAL agreement with Wiley compared to the cost development under conventional conditions of the subscription-based system: The development of total costs of the DEAL agreement at the national level for Germany are shown in the red line. The black line represents the total expenditure that would be expected without a DEAL agreement for subscriptions and open access fees (gold and hybrid) paid on a decentralized basis. The shaded area shows the costs avoided through the DEAL agreement.

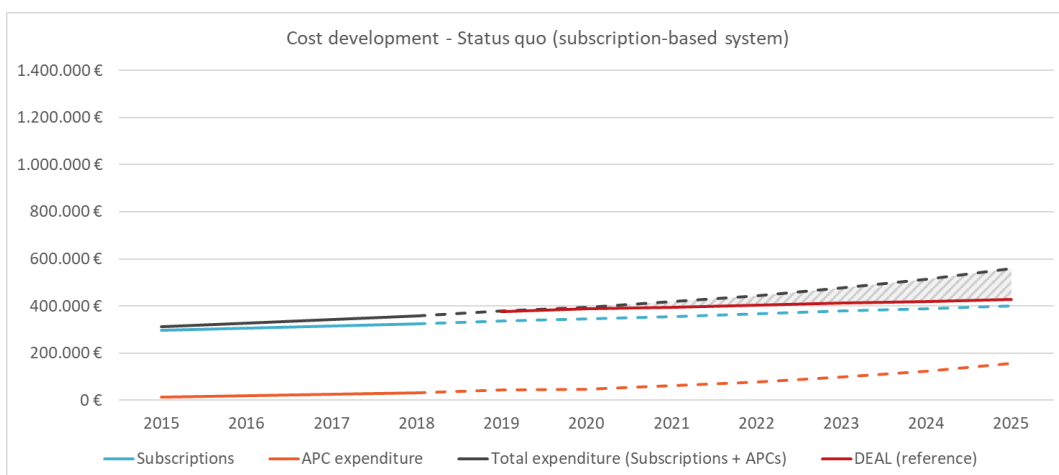
Demonstrating that there is enough money in the system and that the DEAL approach is indisputably the only viable alternative from both a performance and a cost perspective is one thing. The question of whether the money is actually available where it is needed is another. In this respect, research institutions in Germany face exactly the same challenge as their counterparts in other countries that have embarked on a similar path. As a result of the transformation of business models and the shift in the logic of payments to a different form of service, it can hardly be avoided that this be accompanied, in part, by significant shifts among the beneficiaries of the services. The old mode of cost allocation for one service (reading access) cannot possibly transition to the requirements of cost allocation for another service (open access publishing) in the new system without some adjustment. It is obvious that institutions that are hardly burdened or even relieved of their costs in the new modalities will find it easier to cope with the necessary conversions than institutions that suddenly require a significantly higher input of funds. Through its input and visualization capabilities at the institutional level, the DEAL Cost Modeling Tool makes the widely differentiated overall situation visible from a micro, or local perspective. The following charts are intended to give an idea of the range of situations across individual participants in the two DEAL contracts. In the tool itself, each institution can visualize its own situation for both publishers under the defined scenarios.



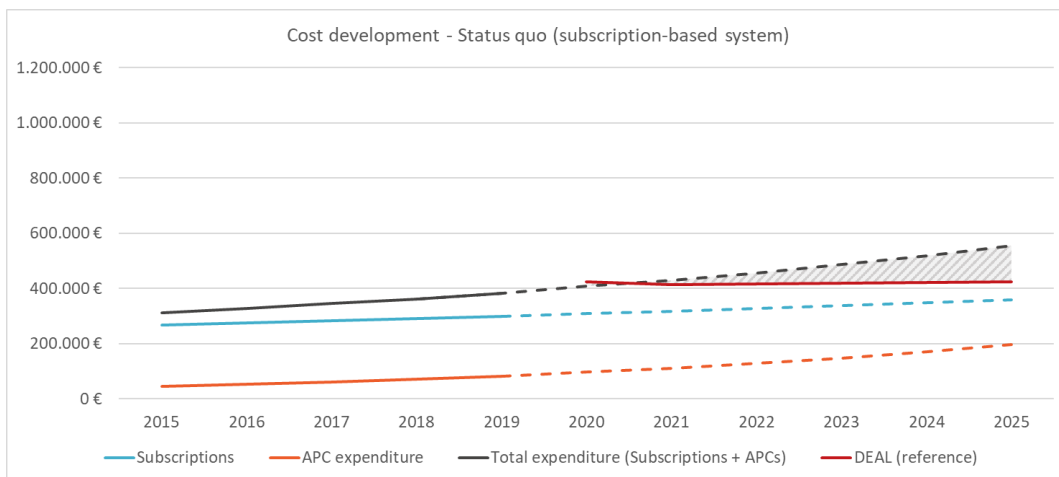
**Figure 12**  
This institutional projection, relative to spending with Springer Nature, exemplifies the situation of an institution where a shift of expenditure to publication-based accounting would lead to significant savings compared to the continuation of subscription-based conditions. The costs under DEAL conditions would even run significantly below the institution's former subscription fees.



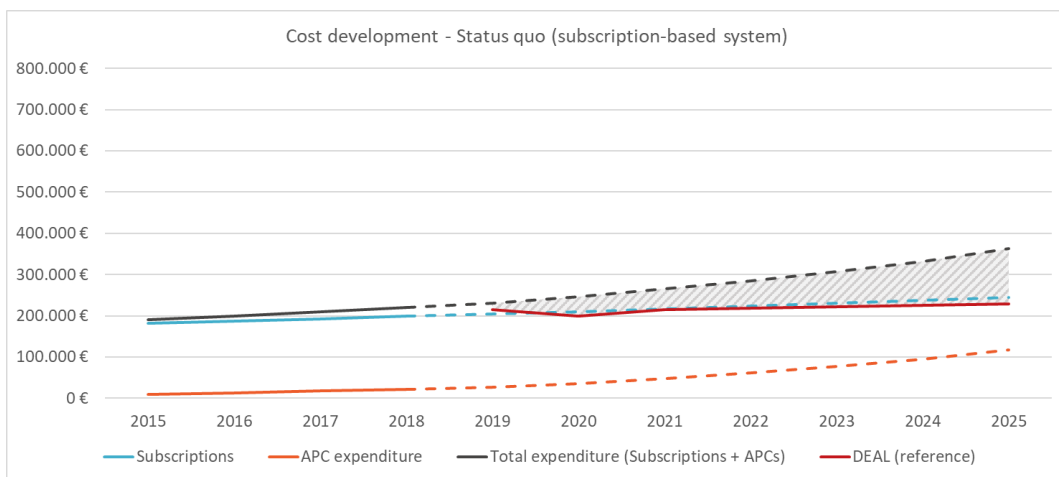
**Figure 13**  
This institutional projection, relative to spending with Wiley, shows an example of an institution where a shift to publication-based accounting would lead to some additional costs on the short term, but ultimately to cost reductions on the longer term, when compared to the continuation of subscription-based conditions.



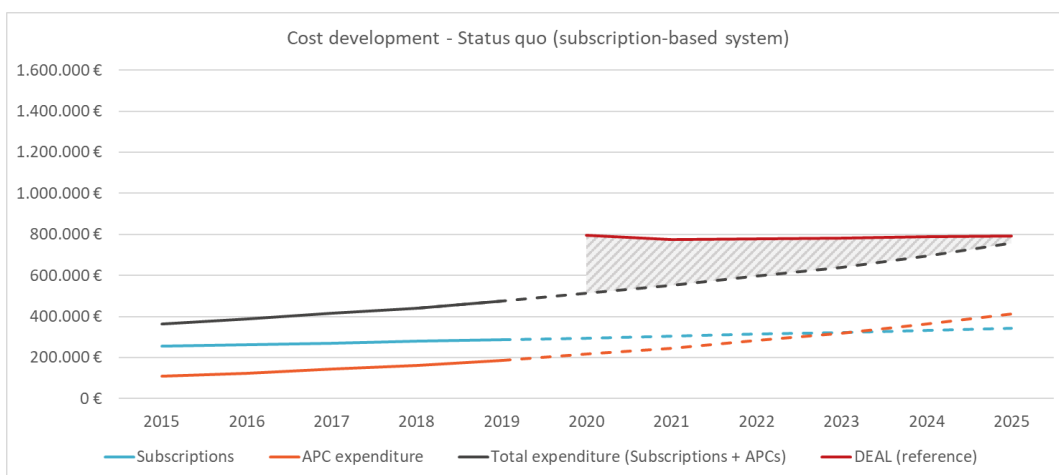
**Figure 14**  
This institutional projection, relative to spending with Wiley, exemplifies the situation of an institution where a shift of expenditures to publication-based accounting aligns fairly closely with previous total expenditures under subscription-based conditions at the outset and ultimately leads to cost savings over time.



**Figure 15**  
This institutional projection, relative to spending with Springer Nature, exemplifies the situation of an institution where a shift of expenditures to publication-based accounting closely aligns with the previous total expenditure at the outset and leads to a reduction in costs over time.



**Figure 16**  
This institutional projection, relative to spending with Wiley, exemplifies the situation of an institution where a shift to publication-based accounting would pretty much follow the course of conventional subscription fees—which may seem cost-neutral in one respect, but in a subscription-based scenario additional costs for articles published in hybrid journals would still be incurred.



**Figure 17**  
This institutional projection, relative to spending with Springer Nature, exemplifies the situation of an institution where a shift to publication-based accounting would lead to significant additional financial burden, especially in the early years, when compared to the starting investments under subscription-based terms.

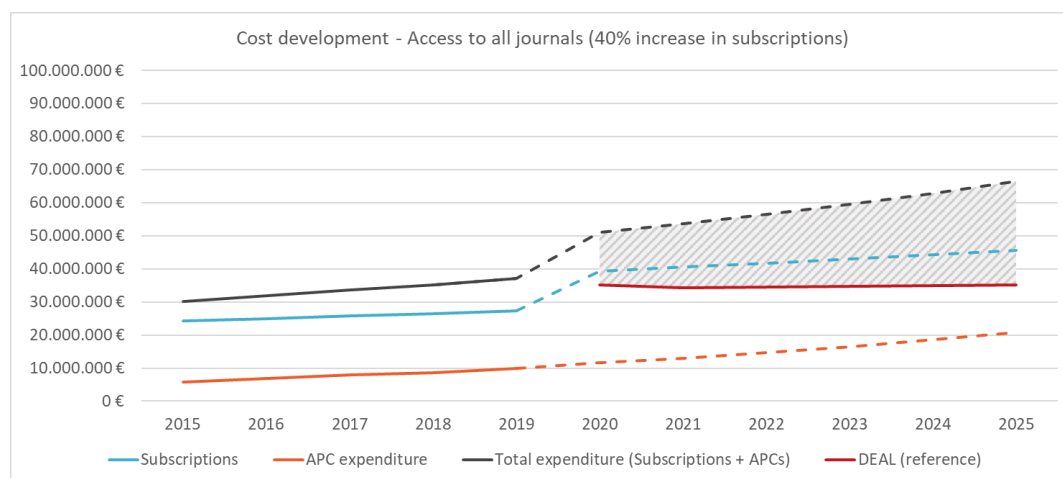
### 3f Closing the current reading access gaps

As often described, the two DEAL agreements are characterized by a significant expansion of the contractual services provided, compared to the situation pre-DEAL. Securing the opportunity for all scholars in Germany to publish the results of their research openly and the right to freely share, use and re-use their peer-reviewed articles was always the primary goal, but a significant improvement in reading access was also targeted from the outset.<sup>21</sup> As the agreements in both cases enabled access for all institutions to all journals in the publishers' portfolios, and in each case including permanent access rights, DEAL also achieved this goal in full. Previously, both publishers had only a handful of individual or consortium agreements in Germany that provided similarly comprehensive access rights. The DEAL agreements thus closed significant access gaps in the education and research landscape in Germany and finally offered access conditions that were as uniform as they were comprehensive across all institutions. As a great number of institutions had access to only a few journals—and some had no access to the journals comprised in the agreements, this expansion in access, in itself, ensures that all learners across the country will have the same opportunities to access scholarly journals and represents an enormous improvement in the working conditions of German researchers.<sup>22</sup>

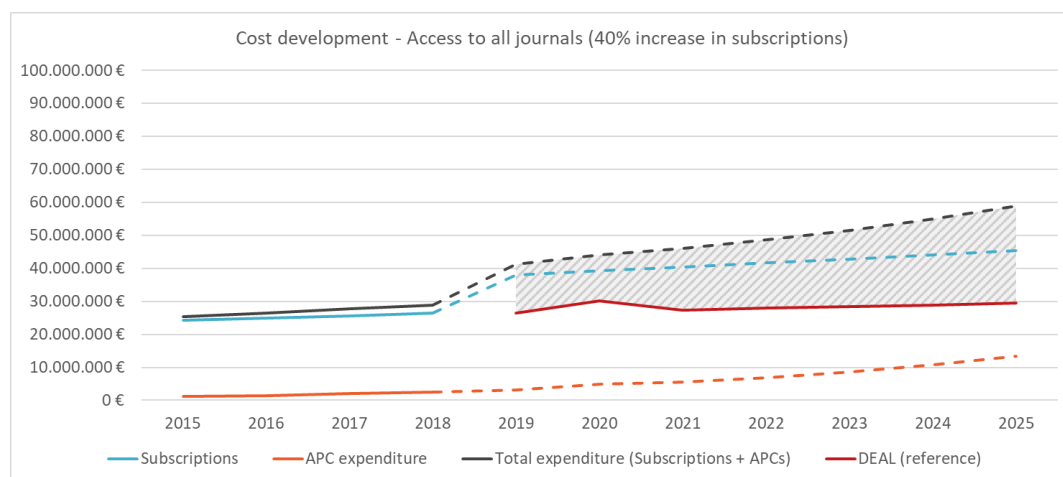
As both publishers report in unison, they have recorded an increase of at least 40% in the number of downloads from Germany on their servers since access to the full portfolio was opened up for DEAL institutions. This increase indicates that in the situation before the DEAL agreements were signed, not all reading needs of researchers and learners were being met. By comparing their own COUNTER statistics from the years before the DEAL agreements with the figures since full access was enabled, each institution can easily determine their own access growth, and certain conclusions can be drawn as to how much reading demand was not previously met (access gap).

The DEAL Cost Modeling Tool attempts to account for the implications of this access gap in the various options of the Tool's cost projections. Therefore, a dedicated modeling scenario is provided for this context which associates the increase in usage observed when the DEAL agreements were introduced with a corresponding increase in costs if institutions were to fill their previous access gaps with additional subscriptions. To fill an existing portfolio gap in a scenario without a DEAL agreement, the tool assumes an investment requirement of 40%, corresponding to the increase in usage reported by the publishers mentioned above. This value can be adjusted in the Tool's settings by users at any time to reflect the specific access demand documented locally. The following charts show how the cost calculations change for the two contracts by selecting the scenario "Access to all journals (40% increase in subscriptions)." The result is clear for both publishers: investment in improving

reading access for researchers under subscription conditions would, in itself, lead to significantly higher costs than the costs of the more extensive services (full reading access and open access publishing) provided through the DEAL contracts.



**Figure 18**  
This chart presents the hypothetical scenario of how costs would evolve if all institutions in Germany filled their current access gaps with additional subscriptions under subscription-only terms, against the backdrop of costs of the DEAL contract with Springer Nature.



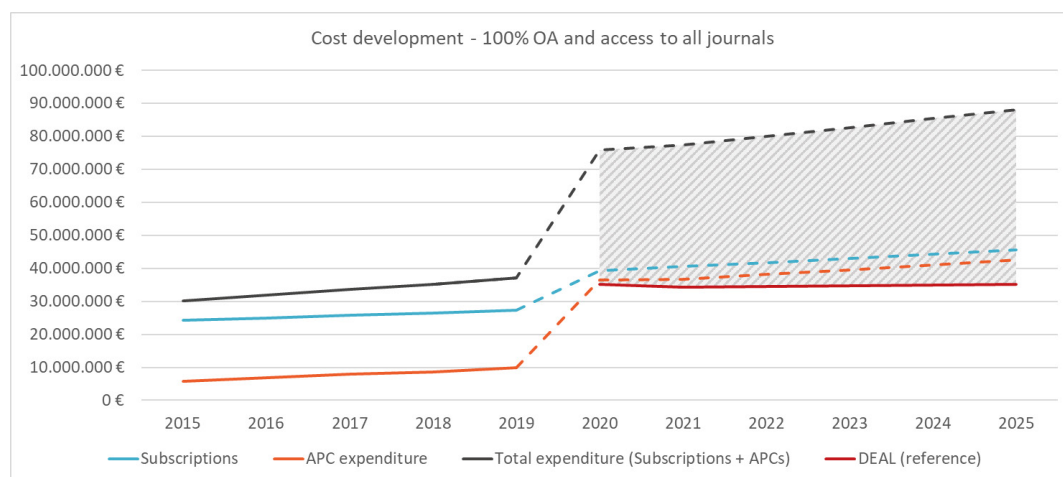
**Figure 19**  
This chart presents the hypothetical scenario of how costs would evolve if all institutions in Germany filled their current access gaps with additional subscriptions under subscription-only terms, against the backdrop of costs of the DEAL contract with Wiley.

In addition, the DEAL Cost Modeling Tool offers further hypothetical scenarios of how costs would develop under specifically defined open access targets, more ambitious than organic growth rates, under the conditions of the previous subscription-based system. This option permits institutions to compare such costs with the costs of open access publishing for 100% of articles under the conditions secured in the DEAL agreements. The scenarios offered are based, on the one hand, on the target set by Germany’s Federal Ministry of Education and Research (BMBF), according to which 70% of all new research publications in Germany are to be published Open Access by 2025,<sup>23</sup> and, on the other hand, on the maximum target of 100%, analogous to what was secured through DEAL. The percentage target value can be adjusted to the user’s own open access target and the tool automatically adjusts its calculations. Since investments in open access publishing under conditions of the subscription system

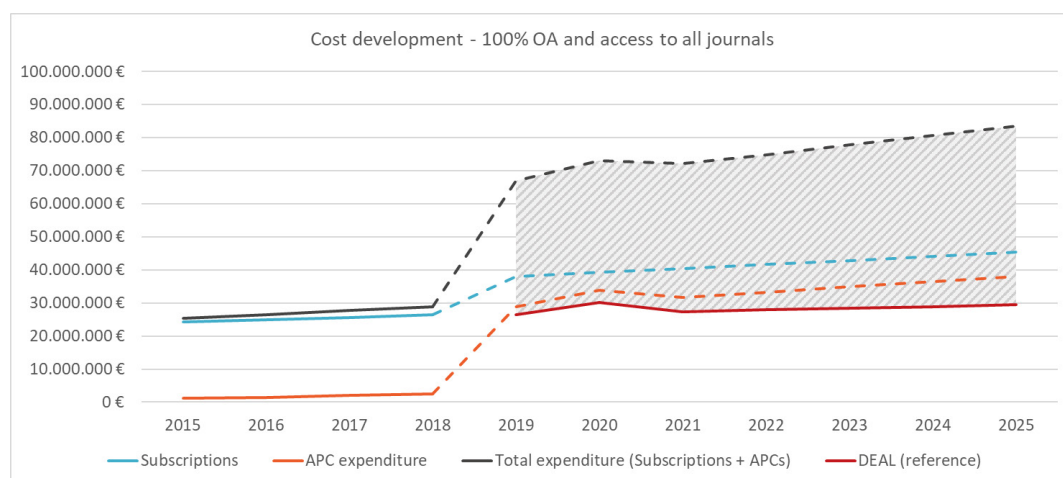
are always additional costs, the trend upwards from the actual costs of DEAL becomes higher and higher.

### 3f The same DEAL without DEAL

The cost modeling scenarios offered in the Tool culminate in the most logically comprehensive service offering that can exist in the current context. The “Access to All Journals” scenario and the “100% Open Access” scenario are combined, replicating the scope and level of services secured through the DEAL agreements, but expressing the associated costs under the conditions of the traditional subscription-based system. This illustrates what a DEAL service portfolio would cost in the absence of a DEAL agreement. The charts below show this scenario for the two publishers. The evidence is overwhelming: the value and necessity of the DEAL approach in order to effectively, sustainably and finally deliver on the commitment to open access to research cannot be denied.



**Figure 20**  
This chart illustrates what the DEAL service package would cost without a DEAL agreement, i.e. under conventional subscription conditions. The red line represents the expected expenditure development under the DEAL agreement with Springer Nature. The black line represents the sum of subscription spending for access to all journals and publication fees for 100% open access. The shaded area shows the cost advantage of the DEAL nationwide transformative agreement approach.



**Figure 21**  
This chart illustrates what the DEAL service package would cost without a DEAL agreement, i.e. under conventional subscription conditions. The red line represents the expected expenditure development under the DEAL agreement with Wiley. The black line represents the sum of subscription spending for access to all journals and publication fees for 100% open access. The shaded area shows the cost advantage of the DEAL nationwide transformative agreement approach.



## 4 A complex tool for a complex reality

The DEAL agreements are, undeniably, complex. The inclusion of various levels of service, of a new billing structure, as well as of the overall nationwide approach that is new to Germany, all go beyond the known dimensions of conventional subscription agreements of libraries or library consortia. It follows that such complex transformative agreements cannot be evaluated with the conventional tools used by libraries to benchmark subscription-only conditions. Assessing and evaluating the costs of scholarly journals from the perspective of subscriptions without a view to the development and entity of open access publishing expenditure, would be, financially, short-sighted and would not do justice to the reality of the current scholarly publishing landscape, nor to the scope and potential of the two DEAL agreements with Wiley and Springer Nature.

By instituting Projekt DEAL, the Alliance of Science Organizations in Germany committed itself to the goals of breaking through the barrier of the paywall and intentionally cultivating its entire organizational logic around open scholarly communication. DEAL thus stands for a deliberate dismantling and overcoming of subscription-based structures. Conceived as transformative agreements, the two DEAL contracts are the first instance of operationalizing the goals of the Alliance, bringing together the service, cost, and processing spheres of “reading” and “publishing” under a single organizational framework for all of Germany. They offer an unprecedented service package of 100% reading and 100% open access publishing for all institutions and scientists in Germany under one roof, thus preparing the ground for a new reality in which open access publishing becomes the default in scholarly communication, authors are no longer forced to transfer substantial rights to their works to commercial publishers, and peer-reviewed research results become freely accessible and reusable. In short, Projekt DEAL is actually putting into practice—with a viable framework and on a large scale—the vision that has been vigorously demanded by the scientific community since the Open Access Declarations of Budapest (2002)<sup>24</sup> and Berlin (2003).<sup>25</sup>

The DEAL Cost Modeling Tool responds to the complexity the DEAL agreements, opening up all relevant parameters beyond the mere dimension of “subscriptions”. Under different scenarios, the costs associated with reading and publishing as a whole are captured and visualized through the Tool’s graphical presentations. In the traditional subscription-based system, open access publishing costs are additive and are incurred outside of central oversight, while under DEAL contracts these costs are integrated and accurately captured in publication-based annual accounting (PABA).

The DEAL Cost Modeling Tool is able to emulate this integrated approach, giving users the ability to observe the otherwise high growth in decentralized spending on hybrid open access articles and note for themselves the effectiveness of the DEAL agreements in neutralizing these costs—along with other effects and scenarios that reveal the cost-containing impact of the contracts on the overall constellation.

The DEAL Cost Modeling Tool is, however, merely a tool and resource. It is not a substitute for the considerations and deliberations that still need to be conducted at the individual institutions comprised in the DEAL agreements—in dialogue with the relevant political bodies and other stakeholders—on how processes and financing will be organized in the future. The DEAL Cost Modeling Tool aims to contribute to this process of deliberation, providing all stakeholders with a fact-based, uniform framework on the basis of which different subscription-based cost scenarios can be modeled, under freely selectable basic assumptions, and compared with the probable development of costs under DEAL-agreement conditions. The DEAL Cost Modeling Tool will have achieved its goal when users feel informed and supported in their assessment of transformative agreements.

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