AMERICAN UNIVERSITY WASHINGTON COLLEGE OF LAW | PROGRAM ON INFORMATION JUSTICE AND INTELLECTUAL PROPERTY

THE ECONOMIC BENEFITS OF OPEN COPYRIGHT EXCEPTIONS

SUBMISSION TO THE PORTFOLIO COMMITTEE ON TRADE AND INDUSTRY REGARDING THE COPYRIGHT AMENDMENT BILL (B13-2017)

Michael Palmedo[1]
Program on Information Justice and Intellectual Property
American University Washington College of Law

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[1] Michael Palmedo manages the economic side of interdisciplinary research on copyright at American University Washington College of Law's Program on Information Justice and Intellectual Property.

I. INTRODUCTION:

This comment presents results of ongoing research on copyright limitations being conducted by American University Washington College of Law's Program on Information Justice and Intellectual Property (PIJIP). The research demonstrates that positive economic outcomes are associated with greater openness in copyright limitations, and it supports arguments that *South Africa will benefit from amendments to its copyright law that make limitations more "open."*

PIJIP defines copyright limitations as more "open" if they are open to the use of any kind of *work*, by any kind of *user* and/or for any *purpose*, as long as the use does not unreasonably prejudice the legitimate interests of the author.

The research findings presented below have four main conclusions:

- Firms in high technology industries that South Africa is seeking to develop – including software development and internet services – enjoy better outcomes when their home countries have more open copyright limitations.
- Firms in the publishing and entertainment industries that rely on copyright are not harmed by greater openness in their home countries' copyright law.
- Countries with more open copyright limitations produce more high-quality research.
- Middle-income countries tend to have less open copyright limitations, and therefore have an opportunity to benefit their information technology and research sectors by implementing changes to copyright law that makes them more open.

These findings support many of the changes in the draft bill that make South Africa's limitations and exceptions more open (e.g. many now apply to the use of any work), including the introduction of a "fair use" right. It also supports an expansion of the bill to include more open user rights, for example by (1) opening the fair use right to purposes "such as" those enumerated in the bill, and (2) to include specific user rights for transformative uses and for non-expressive technical uses.

II. THE IMPORTANCE OF COPYRIGHT LIMITATIONS TO FIRMS AND RESEARCHERS

Many industries rely on limitations and exceptions to operate, and these are often the types of information industries that drive new jobs and growth. In sectors such as software, computer systems development, and scientific R&D, it is important for firms to access, use, and reuse information in order to develop new products. Firms may need to employ reverse engineering or datamining techniques that involve

unauthorized copying of copyrighted works. They may need to use works in different media and in ways that were not foreseen when copyright codes were written. Investors may need to know that technology and research firms are acting within the law before contributing capital to development processes.

Researchers rely on copyright limitations as well. Scholarly knowledge may be enclosed behind paywalls. It may be unavailable in particular universities or libraries, and may not be available in certain languages. Various copyright limitations – including general exceptions, personal use exceptions, educational use exceptions, and library exceptions – may allow researchers to access unauthorized copies of works for research purposes, but only if the exceptions are crafted and applied in an adequately open way.

All copyright laws include limitations for certain uses of copyrighted materials when such uses are deemed to be fair to the right holder and useful for users and society. For example, every member of the Berne Convention is required to have an exception for quoting copyrighted works. However, limitations can be drated and applied in ways that are more or less "open" – referring to the degree in which the given exceptions is available for the use of any work, by any user, and for any purpose within the category of the exception.

The most open copyright user rights systems have general exceptions that can apply to new circumstances that are not envisioned in the Act but are nonetheless fair to the author and useful to the user and society. The most famous of these is the U.S. fair use clause, which permits uses for any purpose that meets a balancing test that considers whether the use has negative impacts on the rights holder.

PIJIP has been conducting empirical research on whether user rights systems that are more open, including whether they include general exceptions, have positive social and economic impacts. The sections that follow summarize our research findings that demonstrate how copyright limitations that are more open are associated with positive economic outcomes.

III. Measuring the Openness of Copyright Limitations

To measure the relative Openness of countries' copyright limitations, and how these have evolved over time, PIJIP is developing a User Rights Database. It tracks changes in copyright laws from countries around the world between 1970 and 2016. We have collected information about the history of copyright limitations in 21 geographically and economically diverse countries, allowing us to run initial econometric tests.[2]

[2] Our data is publically available under a creative commons license at http://infojustice.org/survey. The site includes both the survey responses in their raw form as

To build the database, we circulated a detailed survey on changes in copyright law to legal scholars in 40 countries. The survey defines "law" broadly, explicitly including "all authoritative, published rules or interpretations," including "statutory law, administrative regulations or directives, decisions by courts, enforcement agencies or others." We devise an "Openness Score" based on coded answers to the survey, which includes 76 questions about the openness of copyright exceptions in the law in the respondents' countries.[3] The Openness Score is used in the tests below to demonstrate how firms doing business in a particular country are affected by the openness of its copyright.

PIJIP is continuing to solicit data on the changes in copyright law over time, and we plan to update our Copyright User Rights database later this year in order to provide information on more countries' laws. We would be happy to keep the Committee up to date on further research outputs. Our research results reported below are based on this initial data covering 21 countries.

IV. Open Copyright Limitations and Firm Revenues

Our econometric tests of the effect of openness of copyright limitations use our Openness Score for each country in each year as the independent variable of interest.

A. Firms in industries that rely on copyright limitations

Our tests indicate that openness has a positive and highly statistically significant relationship with total revenue in select information intensive industries.

Figures 1(a) through 1(c) illustrate the positive relationship between our Openness Score and total revenue earned by firms in the Software, computer systems design, and scientific R&D industries. As described further in our methodological appendix, these positive relationships remain highly statistically significant when we run econometric tests that control for firm size, time, and the size and wealth of each firm's home country.

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provided by respondents, and in its coded form for use in empirical work. We have posted the survey on this page as well.

[3] The survey asks a series of questions about 20 copyright limitations often found in national laws, (i.e. – the quotation exception, the education exception). For each of the provisions, we ask whether the law is open to use for any purpose, open to use of any type of work, open to use by any type of user, and open to commercial uses. Once we receive survey responses from our experts, we assign a numerical value of between 0 and 3 for each question. 0 indicates that the attribute (e.g. whether a particular exception is open to the use of any work) is definitely not present in the nations law. 3 indicates that the attribute is definitely present. 1 and 2 indicate the exception is "probably not" or "probably or mostly" present depending on factors such as the ambiguity of statutory language and its development through case law.

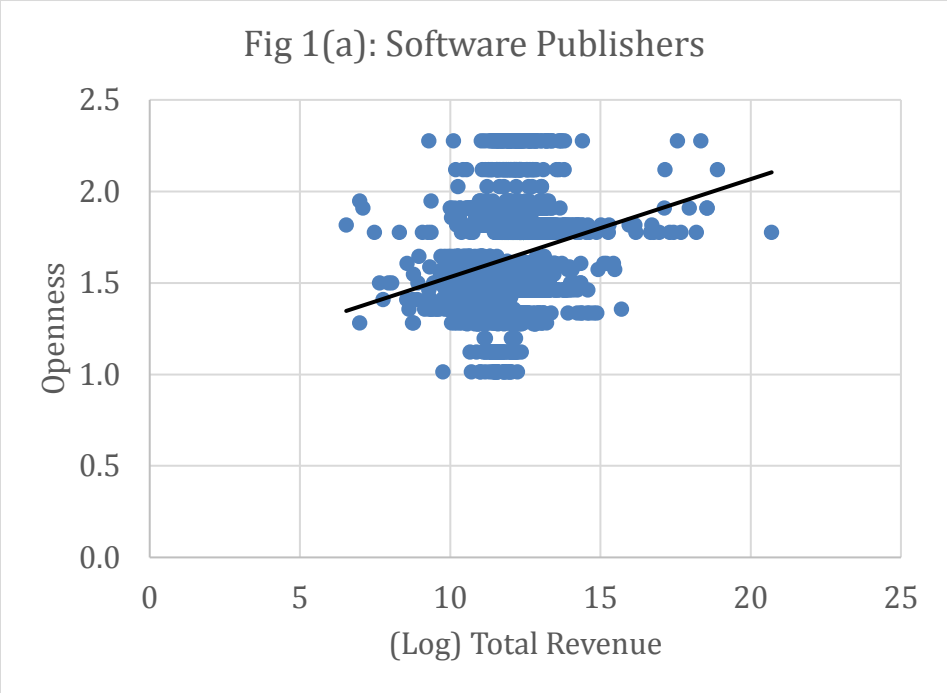
Fig 1(a): Software Publishers
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Openness
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20
25
(Log) Total Revenue

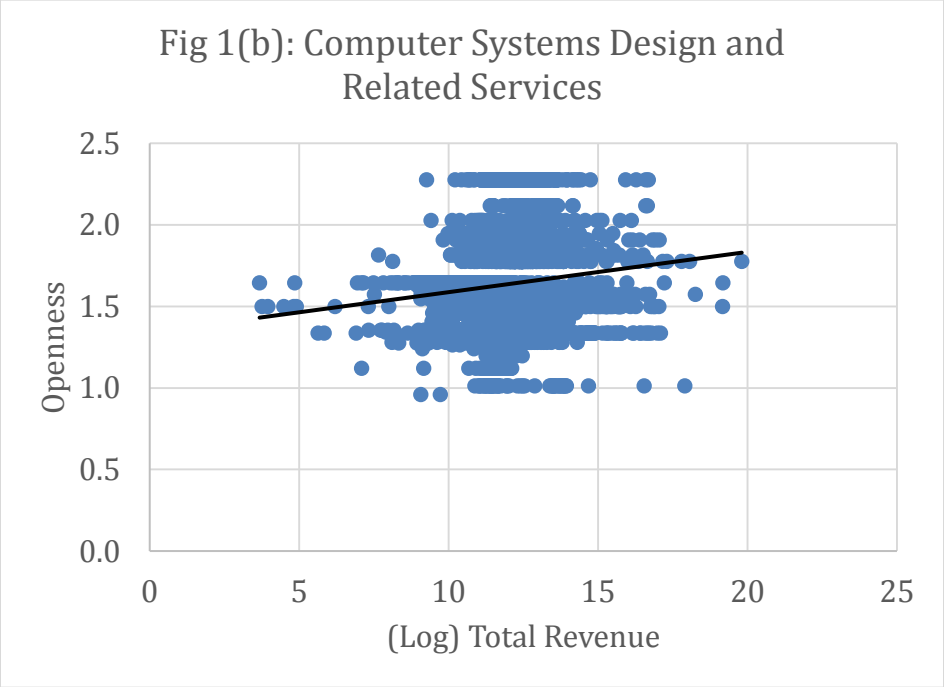
Fig 1(b): Computer Systems Design and Related Services
2.5
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1.0
0.5
0.0
Openness
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5
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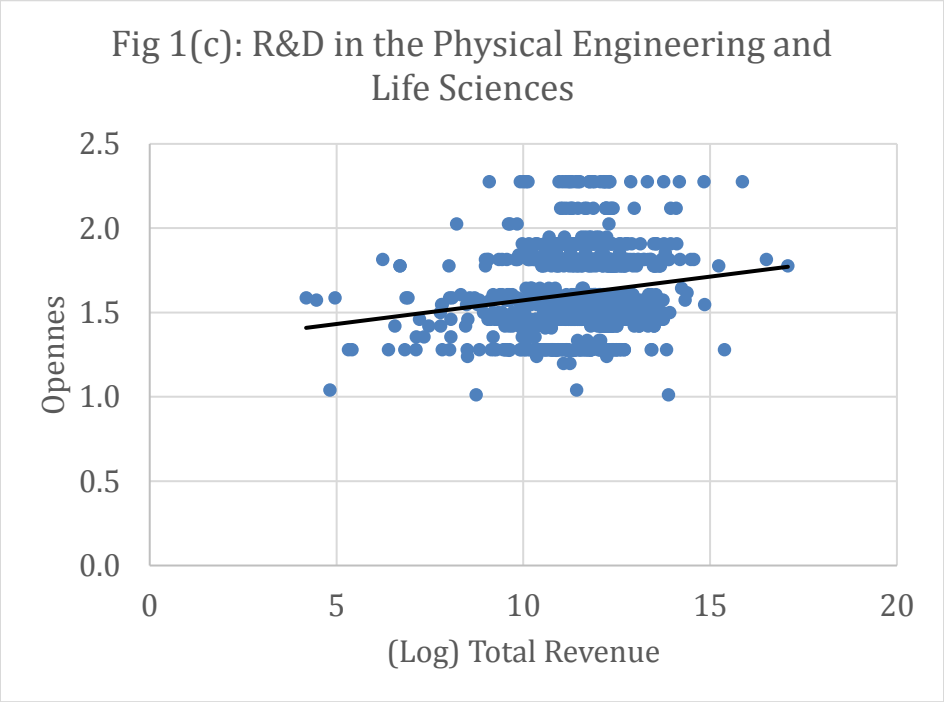
20
25
(Log) Total Revenue



B. Firms in the copyright industries

Our research indicates that increasing openness does not negatively affect revenues earned by firms in the book publishing, music publishing, and movie and video production industries. On the contrary, there is a significant *positive* relationship between openness and revenues earned by these firms. We are not speculating the reason why – we only intend to demonstrate that there is no negative association between the two, and thus to show that openness in copyright limitations does not harm firms in these industries. The lack of a negative relationship is presented in more detail in the Methodological Appendix, which describes the tests, controlling for firm size, time, and national wealth and size.

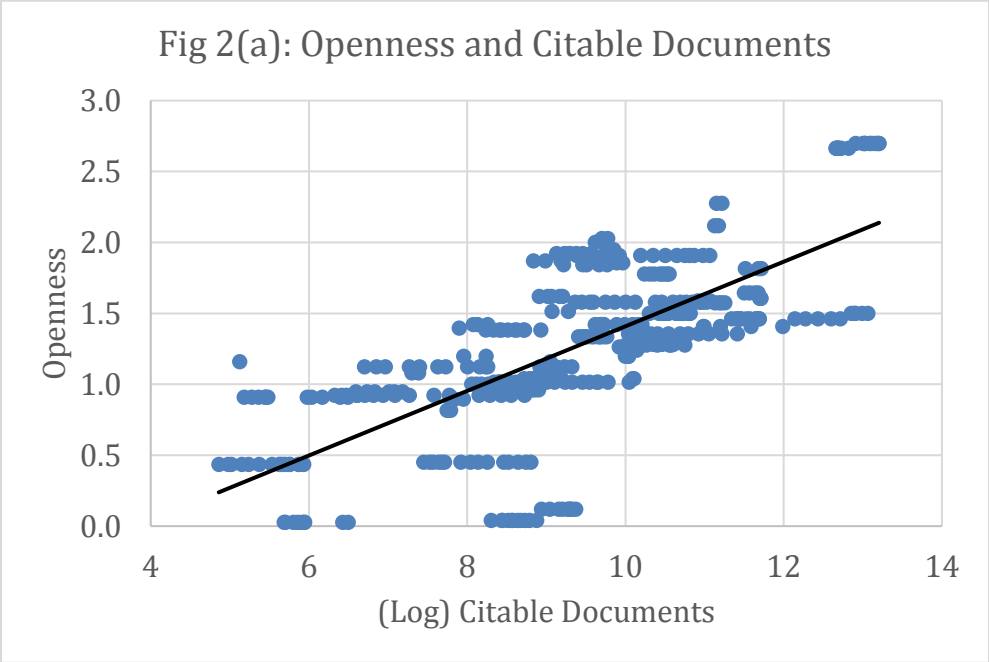
V. Promoting Access to Knowledge

Greater openness in copyright limitations is also associated with more scholarly output, and higher-quality scholarly output.

The second justification for open user rights in Section II is the way that openness helps in the creation of new research outputs. To test this, we first compared our Openness Scores from the User Rights Database to the number of citable documents produced by researchers in each country. The data on citable documents is drawn from the SciMag database, which incorporates publication data from journals and book publishers in 239 countries.[4]

[4] The citable documents, data, and other citations data including the H index, is available for download from

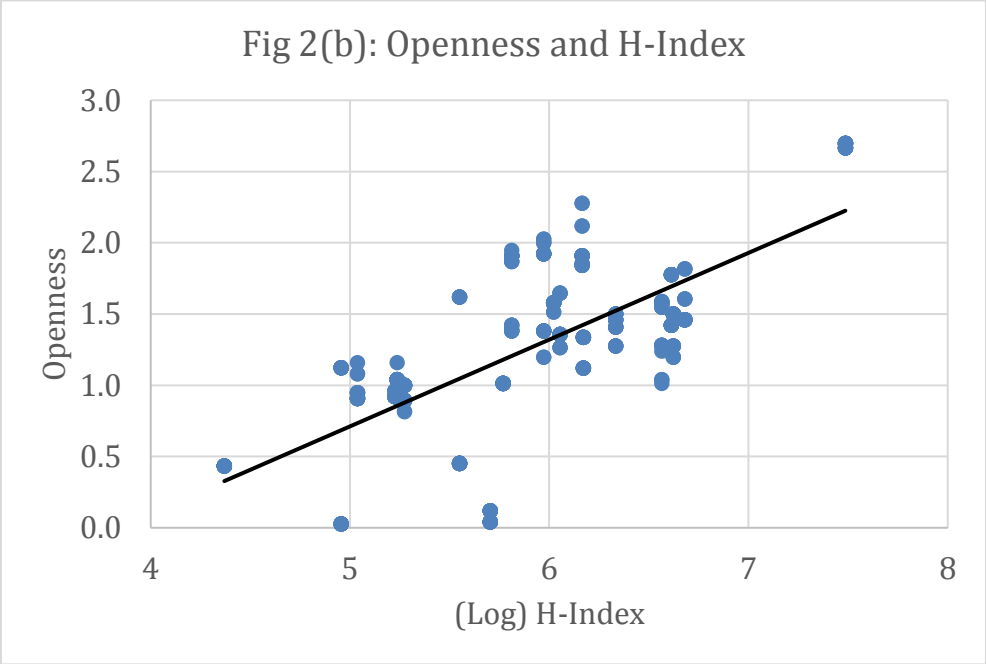
Figure 2(a) shows the positive relationship between openness and research output as measured by citable documents. This relationship remains positive and highly significant when we control for national wealth and size, as explained in our Methodological Appendix.



While the number of citable documents published by a country is an indicator of the quantity of scholarly output, it does not address the quality. To test the relationship between openness and the quality of scholarly output, we use the "H-index." This is the highest number of papers "h" published by researchers in a given nation that have been cited at least h times. The metric was designed specifically to capture both the quantity and importance of a country's scholarly output, and is available from SciMag.

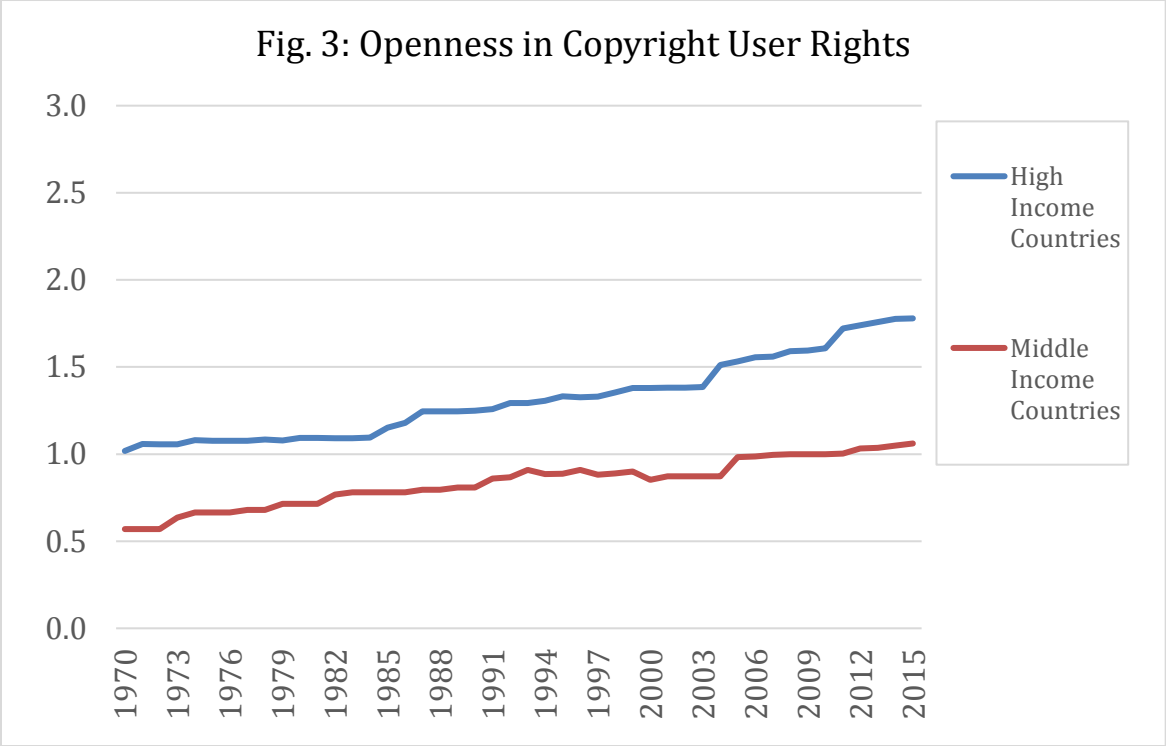
Figure 2(b) shows a clear positive correlation between more open copyright user rights and higher scores on the H-Index – indicating greater production of more heavily cited works. This positive association remains highly significant when we control for national wealth, size, and time, as described in the Methodological Annex.

Scimago at http://www.scimagojr.com.



VI. THE OPENNESS GAP BETWEEN UPPER-INCOME AND MIDDLE-INCOME COUNTRIES

Over the period we have studied, countries have altered their copyright laws in ways that have enhance the openness of their copyright limitations. However, the high-income countries have more open user rights in their laws, and the gap between the two has grown since the early 1990s. Figure 3 reports the average scores of two subsets of respondent countries – the 11 high-income and 10 middle-income countries in our set. Given the association between the openness of copyright limitations and positive economic outcomes demonstrated in the preceding sections, the governments of middle-income nations have an opportunity to benefit their information technology and research sectors by closing the gap.



VII. Conclusion

The research presented in this submission demonstrate that South African firms and researchers can both benefit from greater openness in copyright limitations. When the countries in our dataset had more open copyright limitations, the following happened:

- Firms in information industries such as software development, computer design and scientific R&D earned higher revenues on average
- Firms in the traditional copyright industries did *not* experience losses of revenue
- Countries tended to produce more scholarly output, and more high-quality scholarly output

These findings suggest that greater openness in copyright limitations would help middle-income countries grow the types of knowledge-intensive industries that will drive the world economy in the 21st century. However, middle-income countries tend to have more restrictive copyright laws that block the types of unauthorized uses allowed in high-income countries.

It is in South Africa's interest to use the current Amendments legislation to further open copyright limitations.

METHODOLOGICAL APPENDIX

I. FIRMS IN INDUSTRIES THAT RELY ON COPYRIGHT LIMITATIONS

Our first set of econometric tests indicate that openness has a positive and highly statistically significant relationship with total revenue in select information intensive industries.

We examine the effect on firms in industries that rely significantly upon copyright limitations. We gather firm-level data from Thomson Reuters for companies based in the countries represented in our Copyright User Rights Database, other than the United States. Specifically, we download data for all of each country's firms in the software, computer systems design, and scientific R&D industries. These are the firms identified by North American Industry Codes 5112, 5415, and 5417. We use annual total revenue as our dependent variable, and the yearly number of full time employees as a control variable to capture firm size. Both of these variables are skewed as downloaded, but they log normal. Additionally, we use World Bank data on GDP per capita and population to control for country wealth and size, respectively. We use fixed effects to control for time. Table 1 presents the results.

TABLE 1: Firms in Industries that Rely on Copyright Limitations
Dependent Variable: (Logged) Total Revenue

VARIABLES	(1) Software Publishers	(2) Computer Systems Design and Related Services	(3) R&D in the Physical Engineering and Life Sciences
Openness	0.501***	0.652***	0.696***
	(0.0861)	(0.0802)	(0.246)
(Log) Employment	0.945***	0.912***	1.143***
	(0.0181)	(0.00820)	(0.0285)
GDP per capita	1.49e-05***	1.58e-05***	2.68e-06
	(1.73e-06)	(1.49e-06)	(3.69e-06)
Population	-4.47e-10***	-1.82e-10***	-4.73e-10**
	(6.08e-11)	(5.60e-11)	(2.00e-10)
Constant	11.05***	11.05***	9.670***
	(0.189)	(0.168)	(0.497)
Observations	2,643	6,455	999
R-squared	0.742	0.780	0.714
Time FE	Yes	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As shown in Table 1, our Openness Score has a positive and highly statistically significant relationship with total revenue in all three industries. A one-unit increase in the Openness Score is associated with an increase in revenues of 50%-70%, even while holding firm size, country wealth, and country size constant, and controlling for time. (Note that a one-unit increase in our Openness Score is a very substantial increase in the actual openness of limitations in a country's copyright law, since our Openness Score runs from 0 to 3.)

The overall model describes the variation in the data quite well. The size of the firm has the strongest association with the size of revenues, as expected. Software publishers and computer system design firms have higher revenues when they are operated in wealthier countries, though the relationship between revenues and wealth is insignificant for the R&D firms. The R-squared for each of the industries is 0.72 or better, indicating a good overall fit.

(When we run the same regressions using net income instead of total revenue, there is a positive, significant relationship between this variable and openness for firms in the software publishing and computer systems design industries. However, there is no longer a positive, significant relationship for science R&D firms. There is less data available for net income than total revenue, especially for the R&D firms, which may influence these results. Still, the findings support the overall finding that openness in copyright limitations is associated with positive outcomes for firms in industries relying upon copyright limitations.)

II. Firms in the Copyright Industries

Our research also indicates that increasing openness does not negatively affect revenues of the traditional copyright intensive industries.

Our next set of regressions test whether there is a negative association between openness of copyright limitations and outcomes for the firms in three industries associated with strong copyright: book publishers, music publishers, and motion picture and video production. Once again, the Openness Score is the independent variable of interest and total revenue is the dependent variable. The same set of control variables and time fixed effects are used. As shown in Table 2, there is no negative association between the openness of copyright limitations and revenues among the firms in our sample. Actually, there is a significant *positive* relationship between openness and revenues.

TABLE 2: Firms that rely on copyright protection
Dependent Variable: Logged total revenue

VARIABLES	(1) Book Publishers	(2) Music Publishers	(3) Motion Picture and Video Production
Openness	1.084***	2.607***	1.193***
	(0.146)	(0.822)	(0.156)
(Log) Employment	0.861***	1.098***	1.021***
	(0.0488)	(0.144)	(0.0360)
GDP per capita	3.93e-05***	7.69e-05***	1.16e-05***
	(2.82e-06)	(1.72e-05)	(3.26e-06)
Population	1.58e-10	1.63e-09***	-6.64e-10***
	(2.01e-10)	(5.48e-10)	(1.49e-10)
Constant	10.24***	5.083**	10.75***
	(0.253)	(2.114)	(0.404)
Observations	504	60	504
R-squared	0.748	0.900	0.766
Time FE	Yes	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In each regression, firm size and national wealth are positively associated with revenues, as expected. The R-squared scores of 0.75 or over indicate a good overall fit. It is notable that our data source contains observations for fewer firms in this set of industries (especially music publishers), so our regressions involve smaller sample sizes.

When we rerun the tests on firms' net income instead of total revenue, the significant positive relationship between openness and revenues remains for all three industries. The control variables still behave as expected, though the number of observations fall.

III. Scholarly Output

To test the relationship between openness in a nation's copyright law and scholarly output by researchers in the country, we use two metrics. Citable documents is the raw number of scholarly articles and books produced, while the H-index is a measurement of both quantity and quality.[5]

We tested the correlation of both citations metrics over a twenty-year period in a

[5] As noted in the main part of this submission, the H index is the highest number of papers "h" that have been cited at least h times.

regression with additional controls for national wealth, population, and time. Regression results from the full sample and the subset with the U.S. observations omitted are presented in the table below.

TABLE 3: Scholarly Output
Dependent Variables: (1) Citable Documents, and (2) H-Index

VARIABLES	(1) Citable Documents	(2) H-index
Openness	1.248***	0.394***
	(0.121)	(0.0438)
GPD per capita	0.0369***	0.0219***
	(0.00304)	(0.000904)
Population	2.54e-09***	6.96e-10***
	(1.11e-10)	(2.63e-11)
Constant	6.541***	4.821***
	(0.162)	(0.0577)
Observations	396	396
R-squared	0.725	0.801
Time F.E.	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In both regressions, the coefficient on openness is positive and statistically significant at the 99% level of confidence. The control variables are positive and significant, as expected, and the R-squareds of 0.73 and 0.80 indicate a good overall fit.