Appendix for "You Had Me at Citation: How Citations Increase Support for United Nations Resolutions"

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1 Descriptive Statistics:

1.1 Citations and Resolutions

Both the UNGA and UNSC exhibit increased rates of citation over time, as well as increasing numbers of citations included in each resolution. Intuitively, this makes sense, as the universe of precedents and thus material to cite increases over time. Citation rates are more variable in the UNSC than the UNGA over time, which is likely due to the more flexible institutional nature and small number of negotiating parties in the UNSC, leading to more flexible working norms. Patterns in resolution and citation rates over time are illustrated in Figures 1, and 2. Annual citations, even when normalized by the number of resolutions, particularly increase in the 1990s. This finding is also intuitive, as the 1990s were an extremely active period of legislation in the UN, as Cold War politics no longer precluded consensus between the United States and the Soviet Union/Russia. This pattern is exhibited in both chambers, but is more pronounced in the UNGA.

Figure 1: Citations increasing over time, but at a different rate than resolutions

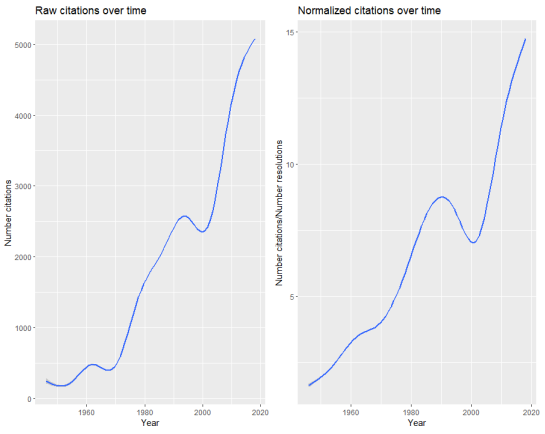
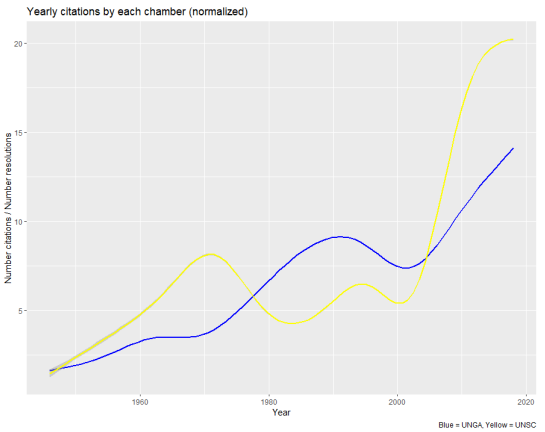


Figure 2: Citations increasing over time in both chambers, but particularly in the UNGA



1.2 Topical Variation

We identify topics using a structural topic model (Figure 3), an approach which we describe in detail in the main text (see also Roberts et al. 2014). We show key findings for each topic area, including the number of resolutions, number of citations, topical alignment, topical proportion of the overall corpus, and age in Table 1 and illustrated in Figures 3, 4, and 5. The strategies used to measure alignment, resolution and citation count, and topic proportion are described in the main text, and our strategy for measuring topic age is described below.

Table 1: Key findings by topic

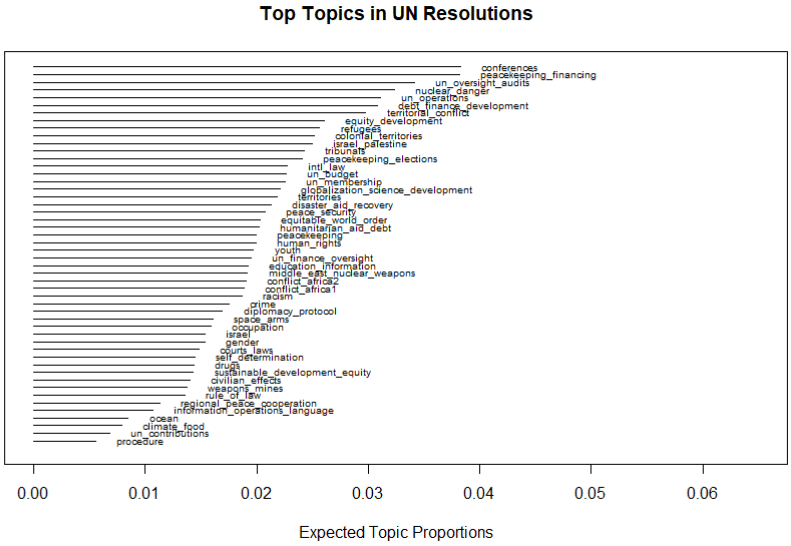
	Number Resolutions	Number Citations	Alignment (97.5 Percentile)	Topic Proportion	Age
peacekeeping	344	2911	37.87	0.020	1949
conflict_africa1	318	3853	40.78	0.019	1946
peace_security	352	4719	42.06	0.021	1946
un_oversight_audits	635	6488	28.53	0.034	1946
tribunals	398	1435	41.02	0.024	1946
territorial_conflict	459	2775	51.83	0.030	1947
conflict_africa2	344	3385	44.67	0.019	1946
peacekeeping_elections	281	2468	36.56	0.024	1948
civilian_effects	232	1767	207.38	0.014	1946
diplomacy_protocol	295	1656	94.35	0.017	1946
occupation	286	2822	41.18	0.016	1951
colonial_territories	495	2586	187.75	0.025	1946
information_operations_language	157	1030	31.96	0.011	1946
peacekeeping_financing	671	12439	675.11	0.038	1946
israel_palestine	424	4268	98.29	0.025	1947
courts_laws	188	843	34.95	0.015	1946
israel	277	3273	79.10	0.015	1946
drugs	275	2657	72.94	0.014	1947
gender	278	2039	51.85	0.015	1946
un_operations	202	1158	25.41	0.031	1946
weapons_mines	251	1361	65.75	0.014	1946
humanitarian_aid_debt	372	2410	59.29	0.020	1946
human_rights	389	3289	61.73	0.020	1947
refugees	482	2252	35.94	0.026	1946
ocean	169	1334	43.50	0.008	1948
education_information	292	2189	34.23	0.019	1946
space_arms	279	2335	151.08	0.016	1958
nuclear_danger	589	5662	111.36	0.032	1948
un_membership	204	451	44.59	0.023	1946
disaster_aid_recovery	420	2741	54.82	0.021	1946
self_determination	269	1651	170.94	0.014	1949
middle_east_nuclear_weapons	355	4442	152.07	0.019	1947
un_finance_oversight	373	2519	62.44	0.019	1946
equitable_world_order	387	1923	46.51	0.020	1947
crime	330	2645	46.27	0.018	1946
equity_development	247	1551	32.53	0.026	1946
conferences	561	3872	34.24	0.038	1946
sustainable_development_equity	208	1553	249.83	0.014	1954
rule_of_law	212	2668	47.91	0.014	1950
youth	378	2370	42.03	0.020	1946
debt_finance_development	633	3520	58.56	0.031	1946
globalization_science_development	391	2978	52.80	0.022	1947
un_budget	435	2881	112.93	0.023	1946
territories	393	1881	198.30	0.022	1946
regional_peace_cooperation	223	1303	45.78	0.011	1948
climate_food	119	1346	74.46	0.008	1948
un_contributions	99	584	99.98	0.007	1946
intl_law	368	2415	48.90	0.023	1946
racism	362	2144	49.11	0.019	1946
procedure	26	39	31.32	0.006	1950

Note: Topic labels shortened for presentational purposes in the main text (Figure 4).

Temporal Effects

Across all topics, while the number of resolutions and topic proportions are relatively constant, the rate of citation is increasing over time and varies across topic areas (Figure 5). On some topics, trends in citation rates and resolution rates move together ("south_africa"), but sometimes they exhibit distinct patterns ("unraw_administration," "conservation"). On

Figure 3: Resolutions by topic areas



Note: Estimation with Structural Topic Model (STM)

Figure 4: Citations and Resolutions by topic areas

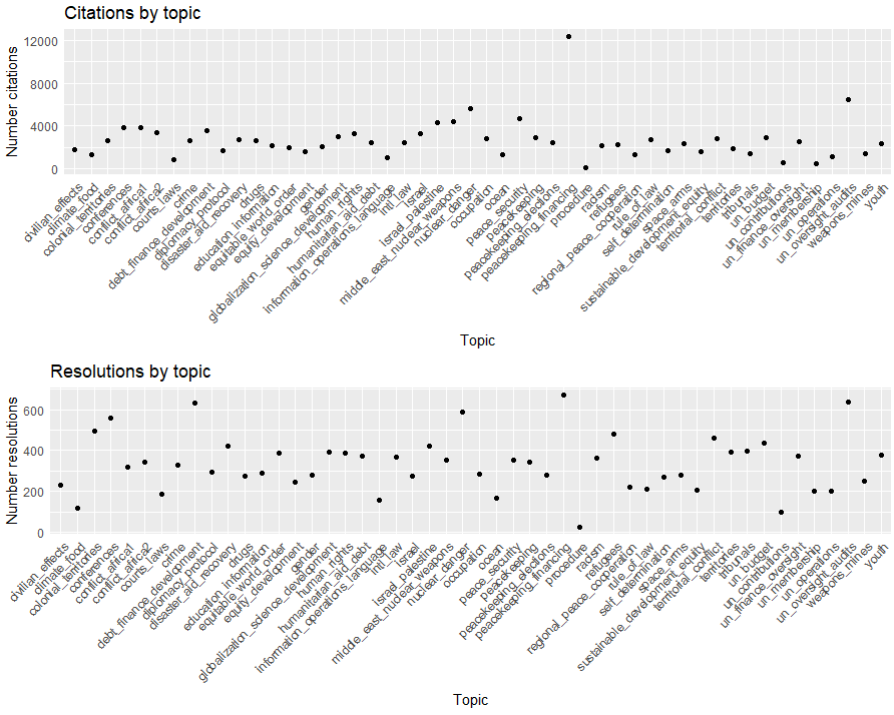


Figure 5: Citations and Resolutions by topic areas, over time (left); Citations and Topic Proportions by topic areas, over time (right)

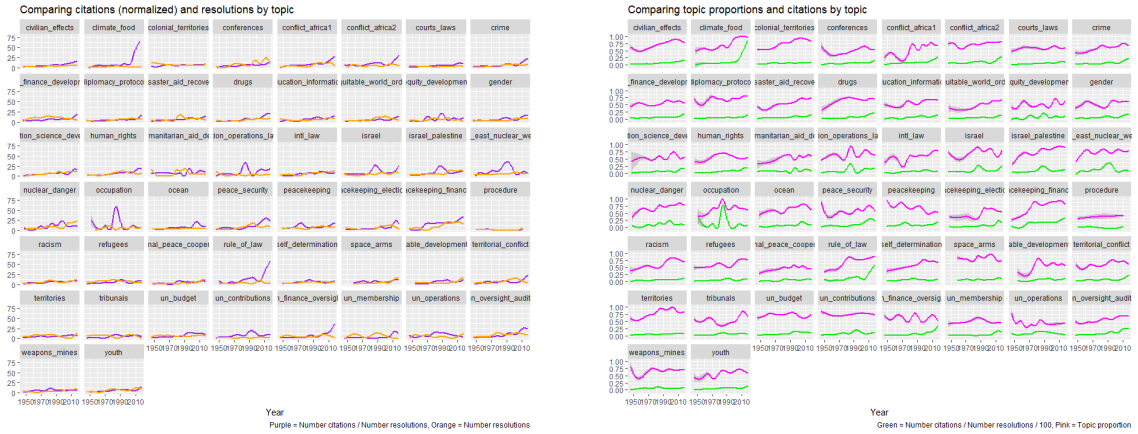
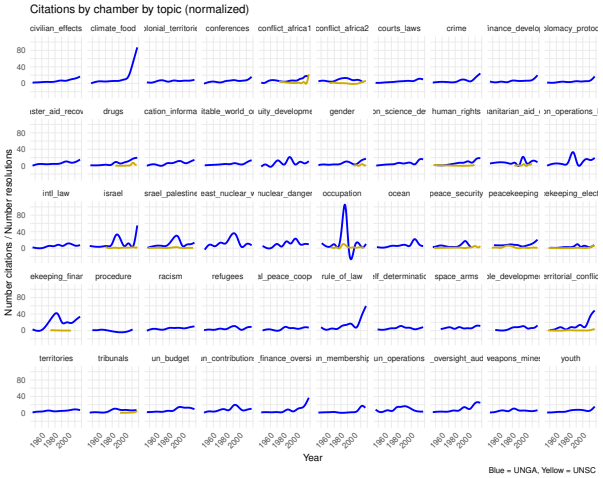


Figure 6: Chamber-level citations on different topics over time

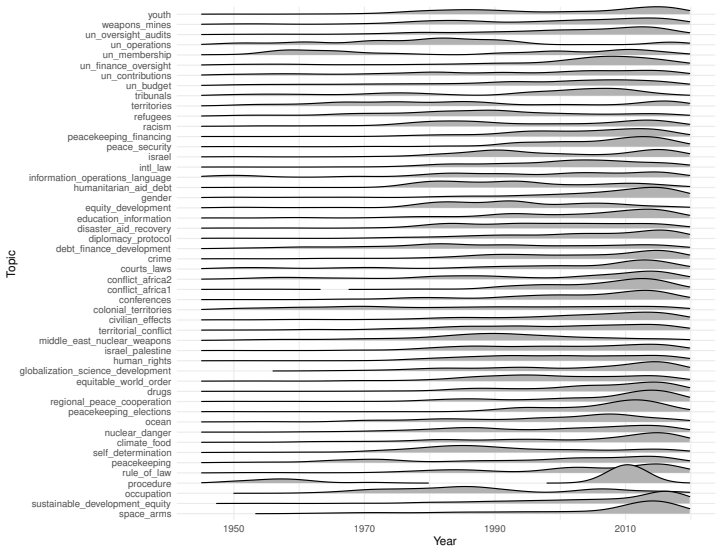


some topics, 'ownership' is passed back and forth between the UNGA and the UNSC over time (Figure 6). For example, "africa" and "conflict_response."

Once issues are introduced onto the UN's agenda, they are unlikely to be removed because of bureaucratic inertia and state incentives to maintain institutional attention. (Hurd 2008, 114-118). We therefore measure topic age using the year in which a resolution with a given modal topic was first introduced onto the UN's working agenda. Our data attest to the validity of this approach, showing that once a topic is introduced, the number of resolutions addressing it remains fairly consistent year on year (Figure 7). For most topics, the proportion of resolutions with that modal topic is also relatively flat over time, though some important exceptions where topic proportion notably changes over time—such as "conservation"—are present. The only topic that vanishes entirely from the agenda is "south_africa."

The age of most topics is essentially equal. 46 of the 50 topics we identify were first introduced during the first decade of the UN's work, which we can see in Figure 7. Alternative measures of issue age, including the mean of the resolution years for each topic, yield similarly little variation. Average resolution age is one such example—for 43 of the 50 topics, the average resolution age is 1990 or more recent, and average resolution age has a standard deviation of just 7.78. This finding suggests that the topics identified by our model may be too broad to capture temporal variation in issue introduction. As we discuss below, subcomponents of the various topics may be introduced at various points in time, but the larger themes we identify have been present on the UN's agenda in one form or another since the institution's founding.

Figure 7: Resolutions over time, oldest to newest topics



2 Patterns in Citation

Topical Patterns

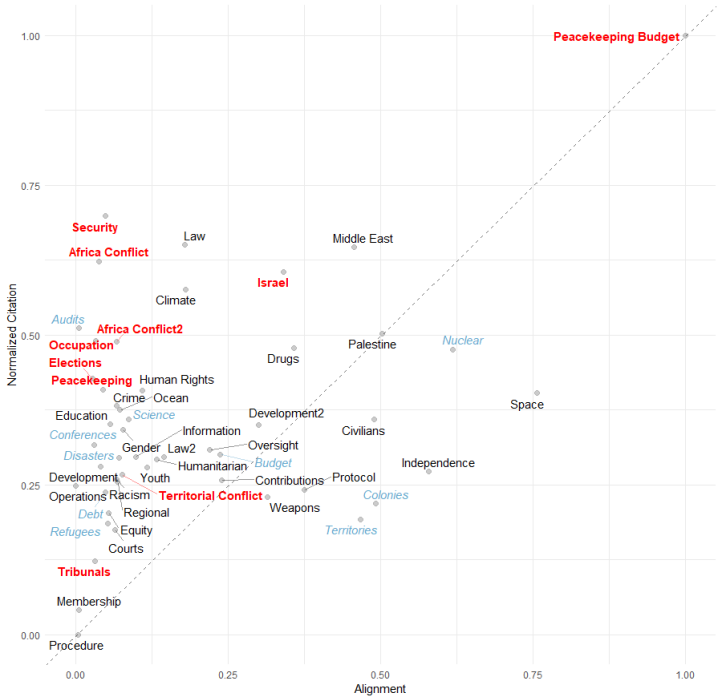
Figure 8 shows the rate of citation and alignment grouped by the topic area of the more recent resolution. As this plot suggests, rates of citation vary substantially by topic area. Specifically, we can see that topics on security-related matters—including matters such as 'Occupation,' 'Conflict Africa1,' 'Israel,' 'Peacekeeping,' and post-conflict 'Elections'—tend to be characterized by higher rates of citation than other topic areas. Procedural matters, including topics such as 'Courts,' 'Membership,' 'Tribunals,' and 'Procedure,' tend to be lowest in citation. This finding hints at the utility of our citation measure: patterns in legislative practice may be obscured by examination of counts of resolutions alone, which are passed with roughly constant frequency

across different issue areas over time.

Our topic labels also allow us to characterize agenda dynamics more broadly. For each chamber and each topic, we counted the number of resolutions from that chamber whose highest-probability topic label matched the given topic. We then calculated a normalized informational entropy value for these chamber-topic count values.[1] Informational entropy is a standard measure of dispersion for discrete probability distributions, which ranges from 0 (least dispersed) to 1 (most dispersed) (Boydstun, Bevan, and Thomas III 2014; Shaffer 2017).

We observe an informational entropy value of 0.95 for UNGA resolutions, compared with an informational entropy value of 0.75 for UNSC resolutions. Since informational entropy is on a non-linear scale, interpreting the difference between these values is difficult. One way to ease interpretation is to use the "effective topics" transformation, which represents the number of equiprobable topics needed to produce a given entropy value (Shaffer 2017).[2] For the UNGA, this transformation returns a value of 41.1, indicating that UNGA resolutions are almost equally split across all topics. By contrast, UNSC resolutions contain 18.8 effective topics, indicating that a topic proportion vector containing approximately half the number of equiprobable topics would produce an equivalent entropy value to the one observed. This pattern aligns with the institutional missions of the two chambers, which mandate the UNSC to focus on a narrower set of security-related topics compared with the UNGA's broader orientation, and suggests that our topic labels are correctly picking up on these different agenda dynamics.

Figure 8: Alignment and citation by topic area



Note: Topics indicated in red/bold are the ten topics on which the UNSC passes the most resolutions, while those indicated in blue/italics are the ten topics on which the UNGA passes the most resolutions. Normalized citation and alignment at the 99th percentile are both rescaled to range 0-1.

Table 2: Key findings by chamber

	Number Resolutions	Number Citations	Alignment (97.5 Percentile)
Overall	17324	132881	—
UNGA	14993	114943	139.61
UNSC	2331	17938	60.57

Chamber Differences

Descriptively, we also find that the chambers are distinct in their citation patterns.[3] Security-related topics generally have the highers rate of citation. These topics tend to be 'owned' by the UNSC, by which we mean that they fall within the institutional remit of the UNSC, and are the topics on which the UNSC produces the majority of resolutions. The UNGA and the UNSC differ not only in the topical remits, but also on many other dimensions such as membership composition, norms, and voting rules. Bearing these differences in mind, we do find that while the UNSC does not employ citation more than the UNGA, either in raw counts or at a per-resolution level (Table 2), the UNSC has employed more *citations per resolution* consistently since 2001.

In addition to employing different citation behaviors, we also observe that the UNGA and the UNSC are highly siloed institutions based on their legislative practices. We find that almost all citation occurs within chamber. We calculate a ratio of in-chamber to out-chamber citation, where 1 represents exclusive in-chamber citation and -1 represents exclusive out-chamber citation. For the UNGA, the citation ratio is 0.86, and for the UNSC is 0.98. On average, 95% of a resolution's citations are within-chamber. Noting the overall tendency towards within-chamber citation, there is substantial variation in cross-chamber citation and alignment across topic area. For example, on the topic of "israel", just 70% of the average resolution's citations are within-chamber.

3 Political Effects

3.1 Sponsorship

Why do countries sponsor resolutions? Sponsoring resolutions in the UN can be costly, as sponsoring obliges a country to participate in drafting and negotiation sessions, to contract and consult with topical experts, and to expend social capital to cultivate support for the resolution amongst the membership. All of these actions are much more involved forms of cooperation than simply voting in favor of the resolution (Finke 2021). Therefore, countries are only likely to *selectively* sponsor resolutions, and as a costlier form of behavior, sponsorship can be considered a stronger signal of political support than voting.

Yet countries have an incentive to sponsor some non-zero number of resolutions in a given year to signal that they are contributing positively to the mission of the UN, which is an important factor for achieving elected leadership positions. Sponsoring a resolution more clearly attributes credit to a country for these purposes, and allows it to use the resolution for signaling or propaganda with domestic audiences. Soliciting more co-sponsors also serves

[1] Normalized informational entropy is defined as $H(X) = -\frac{1}{ln(n)} \sum_{i=1}^{n} X_i log(X_i)$.

[2] Specifically, the "effective topics" for a topic proportion vector of length n with entropy η is $k = n^{\eta}$.

[3] One notable similarity across both chambers is an increased rates of citation over time (particularly in the UNGA), as well as increasing numbers of citations included in each resolution. Intuitively, this pattern makes sense, as the universe of precedents and thus material to cite increases over time.

strategic purposes, as it can signal wider agreement among the membership, which may pressure even non-sponsors to 'follow the herd' and vote in favor of the resolution (Mower Jr. 1962; Rai 1977).[4] We expect countries to sponsor resolutions only selectively because of the costs involved in sponsorship, as we previously discussed. Because of this potential costliness, sponsorship can be considered a strong test of our expectations. In the case of resolution sponsorship, we observe less systematic work on the determinants of sponsorship behavior.[5]. These analyses provide valuable insight into the patterns of sponsorship, but not into questions of the strategic decision-calculus of sponsorship. What makes a state more or less likely to sponsor a resolution?

Our analysis of the relationship between citation and sponsorship largely follows the strategy we outline in the main paper to assess the relationship between citation and voting. To investigate the relationship between sponsorship and citation, we first identify state sponsors for all resolutions for which sponsorship data are available through the UNGA Digital Library, which includes essentially all resolutions passed from 2000 onwards. In particular, for each resolution we identify whether each country was listed as a sponsor of that resolution prior to that resolution's passage. To study relationships between sponsorship and citation, we then calculate the following statistic:

$$S_t = \frac{1}{n_t}\sum_{i}^{n_t} \frac{N_{(i,t)}(sponsor, cite)}{N_{(i,t)}(sponsor)} - \frac{N_{(i,t)}(\sim sponsor, cite)}{N_{(i,t)}(\sim sponsor)} \tag{1}$$

Where n_t is the number of countries in year t, and $N_{(i,t)}(sponsor, cite)$ is the number of resolutions sponsored by country i in year t that also cite country i at least once. S_t therefore represents the average difference in a country's citation rate for resolutions that country sponsors versus those it does not, which we average across countries and years. For example, suppose that the UN passes 100 resolutions in year t, of which 18 cite country i and 82 do not cite country i. If i sponsors 12 out of 18 resolutions that cite i and 38 out of 82 resolutions that do not cite it, $S_{i,t} = \frac{N_{(i,t)}(sponsor,cite)}{N_{(i,t)}(sponsor)} - \frac{N_{(i,t)}(\sim sponsor,cite)}{N_{(i,t)}(\sim sponsor)} = \frac{12}{18} - \frac{38}{82} \approx 0.20$. As shown in Figure 9 (left panel), we find support for our hypothesis: resolutions that are sponsored by a country are approximately 50-75 percentage points more likely to cite a resolution that country previously sponsored, compared with resolutions that country did not previously sponsor.

We conduct a similar exercise to compare sponsorship patterns based on defensive ally citation and sponsorship patterns. We focus on military alliances specifically, which, as a form of 'deep' agreement are likely to be a stronger relationship between states than trade or other types of shallow agreements. Previous findings support this decision. Joining together in the relatively shallow BRICS alliance, for example, did not increase co-sponsorship behavior between members (Dijkhuizen and Onderco 2019), while membership in the EU, an extremely deep alliance, led to coordinate co-sponsorship behavior on human rights resolutions (Smith 2006, 127). To examine ally citation and sponsorship patterns, we specifically calculate:

$$A_t = \frac{1}{|S_{(i,t)}|}\sum_{j \in S_{(i,t)}} (ally\%)_{(i,j)}$$

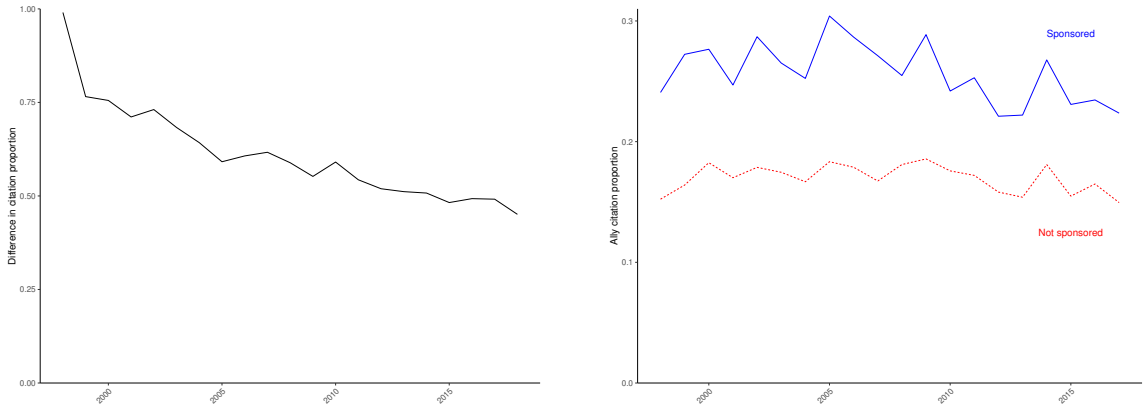
Where $S_{(i,t)}$ is the set of resolutions sponsored by country i in year t, and $(ally\%)_{(i,j)}$ is the proportion of country i's allies that sponsored at least one resolution cited in resolution j. $A_{(i,t)}$ represents the average proportion of country i's allies that sponsored at least one resolution cited in resolutions sponsored by country i in year t. We also calculate this statistic for non-sponsored resolutions, and compare the two in Figure 9 (right panel).

The results of this comparison also support our theoretical expectations. We find that the average proportion of a country's allies cited in resolutions sponsored by that country is approximately 10 percentage points higher than the average proportion of allies cited in resolutions

[4] Mower Jr. (1962) also describes a process of 'indirect sponsorship', in which a state works through a proxy to table a resolution. Analytically, this type of sponsorship cannot be empirically identified.

[5] But see Jacobsen (1969); Rai (1977); Smith (2006); Dijkhuizen and Onderco (2019); Finke (2021).

Figure 9: Difference in citation proportion, sponsored vs non-sponsored resolutions (left); Ally citation proportion, self-sponsored vs non-sponsored resolutions (right)



Note: Difference in voting proportions among resolutions where the state is cited vs. not-cited (left panel) and differences in ally voting proportions, among resolutions that the state votes for ('supported') vs. does not vote for ('non-supported') (right panel)

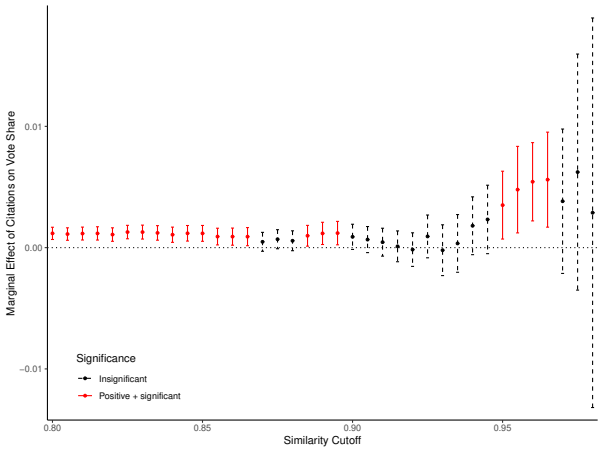
not sponsored by that country. Since we only observe sponsorship and citation decisions at the end of the negotiation process, we cannot be sure of the causal direction between citation and sponsorship—that is, whether citation is a strategy to induce sponsorship, or whether sponsorship leads to the inclusion of citations. However, since sponsorship decisions usually come at the *end* of the negotiation process, this result suggests that citation patterns have some persuasive impact on downstream resolution sponsorship decisions.

3.2 Voting

One possible concern with the in-text relationship between citations and votes among highly-aligned resolution pairs is that this relationship may depend on the number of total citations in the resolution pairs. Resolutions with many citations, in other words, may derive diminishing marginal political returns from additional citations. To partially address this concern, we replicate our in-text results while controlling for the total number of resolutions in the older resolution in each pair (Figure 10). We find that our results are essentially unchanged.

Importantly, this finding does not preclude the possibility of diminishing marginal returns from citation patterns. Among the set of highly-aligned pairs of resolutions, total citation counts are relatively uniform. For example, among the set of resolution pairs with a similarity score of 0.8 or higher, some 80% of pairs have 15 or fewer citations in the older document, compared with an overall in this set of 107 citations. As such, diminishing political returns to citation may be present in resolutions with a particularly large number of citations, but our data contain insufficient observations in this region to identify or rule out this pattern.

Figure 10: Relationship between votes and citations for highly-aligned resolutions is robust, controlling for the total number of resolutions



Note: OLS linear regression model. The dependent variable is the difference in proportion of yes votes between pairs of highly-aligned resolutions. The key predictor variable is the difference in the number of citations for each resolution. Each point represents a model fit with all pairs with similarity scores above a given cutoff. Fixed effects included for the year of each resolution in the pair.

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