The Role of Conferences on the Pathway to Academic Impact: Evidence from a Natural Experiment

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We provide evidence for the effectiveness of conferences in promoting academic impact, by exploiting the cancellation—due to "Hurricane Isaac"—of the 2012 American Political Science Association Annual Meeting. We assembled a dataset of 29,142 articles and quantified conference effects, using difference-in-differences regressions. Within four years of being presented at the conference, an article's likelihood of becoming cited increases by five percentage points. We decompose the effects by authorship and provide an account of the underlying mechanisms. Overall, our findings point to the role of short term face-to-face interactions in the formation and dissemination of scientific knowledge.

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Supplementary materials are freely available online at:

http://uwpress.wisc.edu/journals/journals/ jhr-supplementary.html

JEL Classification: O39, I23, and L38

doi:10.3368/jhr.55.1.1116-8387R

I. Introduction

Modern societies commit considerable resources to academic research, and of these resources academics generally invest a significant proportion in attending (and organizing) conferences and similar gatherings.[1] But is this proportion being well spent? Though conferences feature prominently in the dissemination strategies for most academic projects, it is striking that there is little existing scientific evidence for, or direct measurement of, the effectiveness of such meetings in promoting the impact of academic work.

A main reason for this deficiency lies in a hard to escape identification problem. In general, one does not have a compelling counterfactual for the papers presented in any given conference. An ideal test of efficacy would entail deliberate randomization of paper selection for a scientific meeting.[2] As an alternative to such an intervention, in this paper, we exploit a natural experiment: the last-minute cancellation, due to an act of nature ("Hurricane Isaac"), of the 2012 American Political Science Association (APSA) Annual Meeting.

The APSA meeting gathers close to 3,000 presenters every year, from more than 700 institutions. By the time of its cancellation in 2012, the conference program had been fully arranged and there was therefore a unique opportunity to identify conference effects. We test whether the cancellation lessened the academic impact of the 2012 APSA papers.

We assembled a new dataset comprising 29,142 conference papers scheduled to be presented between 2009 and 2012, and we matched these to outcomes collected over the next four years from the Social Science Research Network and Google Scholar: articles' downloads and citations, respectively. To quantify conference effects, we adopt a difference-in-differences approach. We examine how outcome patterns change in 2012 (first difference) in the APSA meeting series versus in a comparator meeting series (second difference): a similarly large and

significant conference in the same academic field (the Midwest Political Science Association Annual Meeting) that was never cancelled.

We detect statistically significant conference effects in our indicators of visibility. Articles in the 2012 APSA cancelled meeting became less likely to be cited: by about three percentage points within two years, and by about five percentage points within four years. These estimates imply that the experience of an occurring conference increases the likelihood of an article becoming cited, over either time horizon, by about 40 percent. We present several econometric specifications and robustness checks to ensure the validity of our identification strategy: that we are not capturing other factors such as unobservable heterogeneity related to articles' prospects. Notably, the findings survive in regressions that control for author fixed effects.

We consider two different mechanisms that could, in principle, be operating. The conference presentation directly advertises a paper to the session audience, but separately also the authors may (through the processes of making a presentation and of reflecting on feedback received) become encouraged and enabled to further advance their work. We try to distinguish between these ("advertisement" and "maturation") channels mainly by looking at whether citations gained (due to the conference) are more likely to come from participants in the conference (and indeed, participants in the same conference session) than from other academics in the population. We also ask: who benefits from presenting in conferences? Which is to say, does the gain mainly accrue to already-established academics, or to less-known and newcomer authors? One supposition might be that conferences are particularly valuable for less-established authors, for whom the opportunity to gain feedback and to advertise their work is needed most. A countervailing supposition might be that experienced scholars, perhaps with an existing reputation, may benefit by attracting larger audiences within the conference, or by being able to utilize feedback more productively.[3]

The sharpest evidence of a conference impact is found for articles authored by academics with low to intermediate experience and profile. For these papers, the benefit seems to arise though "maturation". However, for papers with more established authors we find indications of an "advertisement" gain of citations from academics participating in the same conference session. In general, our analysis suggests that social interactions during conferences generate positive impacts: for some authors, an improvement or progression of their working paper, for others, more directly ensuring their paper becomes known.

Our findings give scientific corroboration to the common perception among research funders and institutions that conferences play a significant role in disseminating and improving academic work. These results are consistent with correlations found in previous empirical work (Winnik et al., 2012, Castaldi et al., 2015, and Chai and Freeman, 2017), but—to the best of our knowledge—this study is the first to have used quasi-experimental evidence to estimate the benefits of conferences and in this sense is wholly novel within the existing literature.[4] More broadly, we contribute to a growing body of work that investigates the impacts of face-to-face interactions and the determinants of knowledge flow.

The remainder of the paper is developed as follows. In Section II, we discuss the related literature and the channels underlying conference effects on academic impact. In Section III, we explain the data and we present the results in Section IV. In Section V we conclude.

II. Conferences and Academic Impact

The potential roles of conferences in scientific production are manifold, and within this study we focus only on one specific effect: the effect of the conference in promoting the visibility of the presented papers, manifesting in increased downloads and citations.

There are two clear mechanisms through which such an effect could arise. The first, more direct, mechanism may be termed “advertisement”. The presentation of a paper within the conference may lead to academics hearing about the paper who would not otherwise have done so, or to the paper becoming more salient even to the scholars who would in any case have known of its existence. In fact—due to the cancellation—the APSA sent out hard copies of the 2012 meeting programme to all participants so that there remained some opportunity for academics to discover each other's work; but it was the opportunity to learn about this work *in person* that was missed. The second, less direct, mechanism may be termed “maturation”. An academic paper may be improved, or it may be progressed to more visible forms (posted in working paper series, etc.) as a consequence of the conference presentation. This could be because the processes of preparing and delivering a presentation are in themselves conducive to an academic refining her work. Again, in this study we may not be picking up the full effect, because academics would have in any case prepared for the conference, as the cancellation was at such short notice. Maturation may also occur because an academic receives useful ideas, advice and encouragement from other participants (notably the chair, discussant, other presenters, and the audience within her conference session), and the cancellation would certainly have attenuated these benefits.

The maturation and advertisement mechanisms relate, respectively, to significant recent literatures on the *formation* and *diffusion* of scientific knowledge. However, these literatures mainly consider the importance of *long-term* collocation and opportunities for face-to-face interaction.

The maturation mechanism relates specifically to established peer effects in the formation of knowledge, as explored for example in Waldinger (2010), Azoulay et al. (2010), Borjas and Doran (2015), and Borjas, Doran and Shen (2018). In general, this literature reports positive

spillovers from very productive academics to closely related peers, such as collaborators, students and advisors.[5]

The advertisement mechanism relates to work that seeks to understand information flows. One existing literature—McCabe and Snyder (2015), Gargouri et al. (2010), Evans and Reime (2009)—has explored the dissemination benefits of modern communication technologies (open access and online publication). However, another strand of the literature suggests a role for face-to-face interactions in transmission of knowledge. Orazbayev (2017) finds a negative relationship between stricter immigration policies, and bilateral knowledge flow measured by academic citations. Jaffe et al. (1993), Belenzon and Schankerman (2013) and Agrawal et al. (2017) are among many significant papers that have found geographical proximity, state-collocation, and the existence of good transport links to be strong determinants of citations to patents. The seminal work of Jaffe et al. (1993) demonstrates that knowledge spillovers are closely constrained by location. Belenzon and Schankerman (2013) show that citations to university patents and publications decline sharply with distance up to 150 miles—arguably, a commuting distance over which personal interactions are more likely to occur—but are constant after that. In a related literature, Catalini et al. (2016) and Catalini (2018)—using evidence from natural experiments—respectively find that low-cost air-travel links and microgeography (within-campus location) are significant determinants of collaboration. They demonstrate that face-to-face interactions are important for creating and maintaining academic partnerships.

Conferences and workshops represent opportunities for a very short-term in-person interaction, which on first consideration may seem very different in character and potential for effect to the long-term opportunities mainly considered in the literature above. However, there are already hints, in existing work, that short-term face-to-face encounters may also be significant. Blau et al. (2010) showed effects from a mentoring workshop on participants' subsequent publications and research grant applications. Boudreau et al. (2017) showed that a

(within institution) ninety-minute brainstorm session could substantially increase the likelihood of collaboration between participants. In Campos et al. (2018), we use the same data and setting as this current paper to estimate conference effects on authors' future work. We *do not* find that, after the 2012 APSA cancellation, participants produced fewer quality-adjusted subsequent papers (solo or in co-authorship), but we do detect effects on academic collaborations. The cancellation led to a 16 percent decrease in the likelihood of individuals subsequently co-authoring a paper with another conference participant, and to a relative subsequent clustering—a tendency for future new collaborations to form within existing cliques—within the co-authorship network.

III. Data and Methodology

A. Background: The APSA and MPSA Meetings

In investigating the effect of conferences, our analysis focuses on a specific event: the annual meeting organized by the American Political Science Association (APSA). This meeting occurs in the last week of August or the first week of September (always on the American Labor Day weekend), and comprises four days of presentations of panels, posters, workshops, evening sessions and roundtables.

The 2012 APSA meeting was due to take place in New Orleans and was scheduled to start on August 30. However, it was cancelled at less than 48 hours' notice due to the approach of "Hurricane Isaac". By the time of this cancellation the conference program was complete and publically available, providing a group of conference papers that did not have the conference experience. We investigate whether the 2012 APSA papers have reduced academic visibility as consequence of the cancellation, using a difference-in-differences approach.

We examine articles' outcomes across eight conferences. We compare 2012 APSA papers with articles that were scheduled to be presented in conferences that took place, in the previous editions of the APSA Meeting, from 2009 to 2011. To circumvent timing effects and any shocks particular to the cohort of 2012 papers, we use as a control for APSA articles (the treatment group), papers accepted at a comparator conference: the Midwest Political Science Association (MPSA) Annual Meeting.[6]

The APSA and the MPSA are professional associations of political science scholars in the United States. Both associations publish leading journals, *The American Political Science Review* and *The American Journal of Political Science*, respectively. Their Annual Meetings are the largest conferences in the field and are similar in profile and format, though the MPSA meeting has a larger number of presenting papers than the APSA meeting: 4,200 versus 3,000 papers, on average. In Table A1 in the Online Appendix, we describe the Top 30 and Top 10 most populated themes in terms of papers for the two meeting series. There are close similarities, between the series, in the themes that concentrate most papers.

B. Data Sources and Descriptive Statistics

1. Conference Articles

We assembled a dataset of papers presented in the APSA and MPSA Meetings from 2009 to 2012, and corresponding outcomes. We focus on the performance of articles presented in panel sessions (which concentrate most of the participants). In both meetings, panel sessions are one hour and forty-five minutes long and usually have four presenting papers, one chair and one or two discussants.

We collected titles of all APSA articles, comprising 12,070 presented papers. For the MPSA, we have two groups of articles. The first and main group is a random sample of 20

percent of all papers presented in the MPSA meeting from 2009 to 2012, comprising 3,074 articles, for which we searched for all outcomes. The second includes the entire list in the MPSA program, containing 17,072 articles. We obtained this list later on, and therefore only obtained later outcomes for the full list. For clarity, throughout this we refer to the first sample—comprising all APSA papers and 20 percent of MPSA papers—as the "main article sample (with 20 percent of the MPSA papers)" and the second sample—comprising all APSA and all MPSA papers—as the "full article sample (with all of the MPSA papers)". Our datasets—derived from the conferences' online programs—include, for each article, the title, authorship, and each author's affiliation. They also include the session within which the article was due to be presented, and information on the chair and discussant for each session.

2. Participants' Characteristics

We gathered data on conference participants from three sources: the Web of Science (WoS), the Social Science Research Network (SSRN) and the conference programmes.[7] From the WoS, we determined conference participants' prior productivity, observed in a five year window prior to the conference: the numbers (within the relevant window) of each author's publications, citations, and publications weighted by journal impact factor. From the SSRN, we determined whether the participant had posted a working paper in the SSRN before.[8] We linked the SSRN and WoS data to conference participants (that is a combination of authors' first and last name and conference edition) using individuals' first and last name.[9] Note that as these characteristics are conference year-dependent, they convey time-varying individual characteristics.

From the conference programmes, we recovered each conference-participant's affiliation and we associated an affiliation ranking to each author. These were taken from Hix (2004). We aggregated authors' characteristics to the article-level to use as controls in the regressions.

3. Descriptives and the Matched Sample

Table 1 presents averages, for all conference papers and separately for articles in the APSA and MPSA meetings. Overall, 70.9 percent of the papers are solo-authored, 51.7 percent are written by academics affiliated to a top 100 institution, and 11.8 percent of authors from an institution within the top 10. Less than half of the papers are authored by recently published academics (43.7 percent) and only 16.2 percent of papers are authored by an academic with a working paper previously posted in SSRN.

There are some differences between the APSA and MPSA papers. On average, APSA papers are more likely than MPSA papers to be authored by academics with a prior publication (53.5 percent versus 36.8 percent), and are slightly more likely to have been authored by an academic from a highly-ranked institution. Similar differences are observed also in authors' number of publications adjusted by quality, and likelihood of having a previous paper posted in SSRN. Except for the number of authors and proportion of solo-authored papers, these differences are all statistically significant.

Table 1

The diff-in-diff approach that we are using controls for systematic differences across conferences, such as different standards for article acceptance. The key identification assumption is that there are common pre-trends in the outcome variable for APSA and MPSA papers, and that had the 2012 APSA conference taken place, outcome differences between the 2012 papers and the 2009–11 papers would have evolved in a parallel manner for papers in both conferences. This would be violated if the APSA papers became weaker in 2012, whilst the

MPSA papers did not (or, if the MPSA papers became stronger). It is worth noting that, since the MPSA conference takes place five months before the APSA conference, there is no possibility that cancellation of the 2012 APSA meeting in itself affected in any way the profile of papers at the 2012 MPSA meeting.[10]

In Figure 1, we plot articles' characteristics described in Table 1—predictive of outcomes. Average characteristics seem to have changed in the same manner over the years, providing some supportive evidence for the suitability of MPSA papers as a control group in the diff-in-diff analysis.

Figure 1

As a robustness check, we also conduct analyses for a more homogeneous set of papers across the APSA and MPSA Annual Meetings. Using a non-parametric Coarsened Exact Matching (CEM) approach (Iacus, King and Porro 2011, 2012), we selected MPSA (control) articles with the same conference-year and covariates described in Table 1 as the APSA (treatment) articles.[11] The resulting matched sample is described in Table A2, and it accounts for 73.8 percent of all conference papers.

4. Outcomes

We collected conference articles' outcomes from SSRN and Google Scholar. As the MPSA meeting precedes the APSA meeting by five months, we conduct our analysis using outcomes collected five months earlier for MPSA articles than for APSA articles.[12] From Google Scholar, we collected citation counts recorded 24 months and 48 months after the 2012 MPSA and

APSA conferences (respectively, in April and September, 2014 and 2016), for the main article sample (with 20 percent of the MPSA papers).

There are significant challenges associated with tracking unpublished papers. The titles of pre-published papers often change over time and indeed authors' projects can develop, evolve, divide or combine in ways that mean one cannot objectively say whether a specific working paper is the same paper that was presented at a conference or not. In order to increase our chances of finding conference articles, our main search was made based on authorship and an abbreviated form of each article's title. Our initial search (in April and September 2014, two years after the 2012 meetings) recorded information from the first three Google Scholar hits. (In our auditing, we found that, if a conference paper could be found on Google Scholar, then in more than 90 percent of the cases it did so in the first three hits.) We developed an algorithm (explained in the Online Appendix) to verify title similarity between the papers discovered by the search and the conference paper. In constructing the citation outcome, we retained only the highest hit (that is the first among the three Google Scholar articles) that (a) was verified by the algorithm as a title-match, and (b) had exactly the same authorship as the conference paper. If none of the first three Google Scholar hits were thereby retained, we considered the paper as "not found on Google Scholar" and as having zero Google Scholar citations. To check the accuracy of our sample, two research assistants conducted manual checks on 900 randomly chosen articles (a sample approximating 5 percent of our full dataset). From this sample, 96.6 percent of the articles identified on Google Scholar were considered correct.

In the later Google Scholar search (in April and September 2016, four years after the 2012 meetings) we expanded the collection, gathering information on the first ten hits in Google Scholar.[13] For the citation outcome we again used the highest of these hits that was also (by the same criteria as before) both a title-match and an authorship match. In a second step, we also collected information on the ten first papers that cited the selected Google Scholar hit, by

accessing the “Cited by” link in Google Scholar. In Figure A2 in the Online Appendix, we provide examples of this data. After excluding self-citations, we use this data to identify whether the conference paper was eventually cited by academics not in the conference, academics in the conference, and academics in the same conference session.

From SSRN, we collected counts for articles' downloads. The SSRN downloads outcome we use is measured by the number of times a paper has been delivered by the SSRN to an interested party either electronically or as a Purchased Bound Hard Copy. At the working paper stage, this is the most-used indicator for visibility and (though SSRN also records articles' views and citations) is the primary measure used in SSRN's ranking of authors and papers.

We initially collected these counts fifteen months after the 2012 conferences (in September 2013, for MPSA papers and in January 2014 for APSA papers) and then subsequently at 12-month intervals thereafter, in each case for the main article sample (with 20 percent of the MPSA papers). For convenience, we shall refer to these observations as “one year”, “two years” and “three years” after the 2012 conferences. This search was based on authorship and an abbreviated form of each paper's title. We found relatively few SSRN entries for the MPSA papers: only 103 across the four years (2009–12).

We then conducted a later search (in September 2015 and January 2016), using the full conference paper sample (with 100 percent of MPSA papers). This search (for which we used a different web-scraping service) was based on authorship and each paper's full title. Because these search criteria were more restrictive, we found fewer APSA papers in SSRN (2,351 as opposed to 2,892), but we nevertheless achieved our goal of increasing the size of the MPSA control group: this time identifying 445 MPSA papers. As the size of the control group is more satisfactory, we use the outcomes from this later search in our main results. In Table A3 in the Online Appendix we provide details about the differences across SSRN search samples. In

Table A4 in the Online Appendix, we report—for comparison—the estimated conference impacts based on the earlier ("one year", "two years" and "three years") searches.

Table 2 presents summary statistics for all articles' outcomes considered in the main regressions. Panel A reports the summary statistics for SSRN outcomes observed three years after the 2012 Meetings. Ten percent of conference papers are found to be posted in SSRN and among these the average number of downloads is 95.2. When considering all papers (even those not posted in SSRN, that consequently have zero downloads), the average number of downloads is 9.14.

As shown in Panel B, two years after the 2012 Meetings, 27 percent of papers are found in Google Scholar. Citations are highly skewed: ninety-eight percent of papers having fewer than ten citations. We therefore examine the likelihoods of a conference article receiving at least one citation, at least two citations, at least five citations and at least ten citations. Two years after the 2012 Meetings, these thresholds are met, respectively, by 11, 8, 4.3 and 2.4 percent of papers. These proportions grow over time, to 17, 12.9, 8.3 and 5.7 percent, four years after the 2012 meetings.

Table 2

Next - in Figures 2–4 - we provide some visual evidence for the impact of the 2012 APSA cancellation, by decomposing average outcomes by the eight conferences. We focus on the number of accumulated downloads, the percentage of papers that received at least one citation (two and four years after), and the percentages of papers found online. In the Online Appendix, Figures A4–A5, we provide figures for all remaining outcomes. There is a visible drop in

outcomes for 2012 APSA papers, that is not mirrored for 2012 MPSA papers, suggestive of conference effects. We examine this relationship in a more controlled way, as explained next.

Figures 2–4

C. Regression Specifications

We first estimate the following OLS equation, Equation 1, using as the unit of observation the article described in the conference programme. This is our baseline specification.

$$(1) \quad y_{ist} = \alpha + \beta_1[s = APSA][t = 2012] + \beta_2[s = APSA] + \left(\sum_{T=2010}^{2012} \theta_t[t = T] \right) + \pi_t[s = APSA] + \lambda \mathbf{X_{ist}} + \varkappa \mathbf{Aff_{ist}} + \nu_{ist}$$

where y_{ist} is the outcome of a conference article i as due to be presented in year $t \in \{2009,2010,2011,2012\}$ of conference series $s \in \{APSA, MPSA\}$. The term $[s = APSA]$ is a conference series dummy (set to 1 if $s = APSA$, 0 otherwise); $[t = T]$ a conference year dummy; π_t is an APSA specific year-trend variable (that is, linear in t and to control for any differential time trends between the APSA and MPSA meeting); and ν_{ist} is a random term. The vectors of covariates $\mathbf{X_{ist}}$ and $\mathbf{Aff_{ist}}$ respectively include article characteristics—the number of authors in the paper, the accumulated number, over all article authors, of publications weighted by journal impact factor, and an indicator for whether any author had a previous paper posted in SSRN—and affiliation dummies (using the highest-ranked institution among the article authors' affiliations). The conference impact is revealed by the coefficient β_1. We report Huber-White robust standard errors. (It is worth noting that the results are neither weakened nor lose statistical significance when standard errors are clustered at the author level.)

To control for author time invariant unobservable heterogeneity, we also analyse the data at the article-author level,[14] and estimate Equation 2 with individual-fixed-effects:

$$(2) \quad y_{aist} = \delta + \gamma_1[s = APSA][t = 2012] + \gamma_2[s = APSA] + \left(\sum_{T=2010}^{2012} \theta_t[t = T] \right) + \pi_t[s = APSA] + \lambda \mathbf{X_{ist}} + \varphi_a + \varepsilon_{aist}$$

where y_{aist} represents the outcome of an article i (due to be presented in year t of conference series s), as associated with one of its authors, a. The term φ_a are author-specific-fixed-effects. The effects are identified because authors frequently have papers presented in multiple meetings.[15] The regression identifies, in coefficient γ_1, the within-author gap in articles' outcomes across the APSA and MPSA meetings in 2012 compared to previous cohorts.

It is also the case that some participants send the same paper to both the APSA and MPSA meetings (6.8 percent of papers). This might lead to an underestimate of the conference effects as the outcome sometimes also duplicates across conferences. We also provide estimated impacts for all outcomes, excluding these papers.

IV. Results

We present several tests for the effects of conferences on articles' academic visibility. We examine the conference effect on downloads and consider the effect on likelihoods of accumulating citations. We then test for heterogeneous effects by session and authorship characteristics and provide evidence for the underlying mechanisms.

A. The Effect of Conferences on Articles' Visibility

We begin by examining, in Table 3, conference effects on articles' SSRN downloads. To avoid undue influence of a small number of papers with very large numbers of downloads, we exclude papers that accumulated more than 500 downloads. We detail in the Online Appendix (Table A5) these excluded papers, and present (in Table A6) results—which are qualitatively similar—including all papers, winsorizing the data, and using alternative outlier cutoffs.[16]

Each entry in Table 3 reports OLS estimates for the diff-in-diff coefficient from Equation 1. We present results without controls in Column 1 and including controls for article characteristics in Column 2. In Column 3, we replicate the specification in Column 2, but restricting observations to articles in the matched sample. In Row 1, we present estimates for the diff-in-diff coefficient in regressions using, as the article outcome, the overall number of SSRN downloads. For this variable, papers not found in SSRN are treated as having zero downloads. The estimates are all statistically significant (p-value<0.01), and indicate that the 2012 APSA meeting cancellation lead to a decrease of around 4.5 to 5.4 downloads per article. In Rows 2 and 3 we decompose this overall effect. The cancellation may have changed the likelihood of participants posting their paper in SSRN, and it may also have affected the rate at which articles, once posted on SSRN, were subsequently downloaded. In Row 2, the entries represent estimated impacts on the probability that a paper is posted in SSRN. The diff-in-diff estimates are negative—suggesting that the cancellation led to fewer participants uploading their papers. But the coefficients are not statistically significant for the most controlled specifications (in Columns 2 and 3). In Row 3, we examine the impacts on the number of downloads, but restricting the sample to articles that were posted in SSRN. The diff-in-diff coefficients are negative, suggesting also a decrease in papers' readership, but the point estimates are not (for the most controlled specifications) statistically significant.

In Rows 4–6, we replicate regressions, but excluding articles scheduled to be presented in both the APSA and the MPSA meetings. (The APSA meeting organizers encourage participants to upload their conference papers in SSRN and therefore, for our downloads outcome, there is a specific risk of contamination, due to a possibility that MPSA papers found in SSRN may often be papers presented also in the APSA meeting.) For this sample, the magnitudes of estimated effects, and their t-statistics, increase for all outcomes.

We might tentatively suppose that the overall effect on downloads (in Rows 1 and 4) arises both because authors became somewhat less likely to post their paper in SSRN, and because, once posted, articles were less-frequently downloaded.[17]

Table 3

Next, we examine whether the 2012 APSA meeting cancellation had an impact on the likelihood of articles accumulating citations. Again, we provide diff-in-diff estimates for several regression specifications and samples. We report results for Google Scholar outcomes measured two years after, in Table 4, and four years after the 2012 meetings, in Table 5.

Focusing first on the two year outcomes in Table 4, we report coefficients, in Row 1, from simple OLS regressions without article controls and, in Row 2, from specifications controlling for article covariates. The estimates in Row 2 indicate that the APSA meeting cancellation led to decreases in the likelihoods of presenting papers receiving at least one citation and at least two citations of more than 3 percentage points. (It transpired that, within two years, just 7.1 percent and 4.5 percent of 2012 APSA papers received at least one citation and at least two citations respectively, so the implied effect of conferences is to increase these likelihoods by 40–70 percent.) We also detected conference effects on the likelihood of papers collecting

larger numbers of citations: the cancellation leading to a decrease of 1.9 percentage points in the likelihood of receiving at least five citations. In Row 3, we report results from Equation 2, replacing institution dummies with covariates for author-fixed-effects. The coefficients for conference impacts become larger in magnitude, with lower p-values, suggesting a possible selection of more likely-to be-cited authors into the 2012 APSA meeting. The estimates indicate that the conference cancellation led to decreases of 8.2, 7.2 and 4.5 percentage points respectively in the likelihoods of a paper receiving at least one, two or five citations. In Rows 5 and 6, we present results for the group of papers in the matched sample. While none of the estimated effects are significant from the OLS regressions (in Row 5), they become significant in specifications including author-fixed-effects (in Row 6) and they resemble in magnitude the impacts estimated for the full data (in Row 3).

We also report, in Table 4, estimates for the effect of the conference cancellation on the likelihood of the conference paper being found, in our search, on Google Scholar at all. These coefficients, in Column 5, are all negative, and in most specifications are statistically significant, with estimated effects varying between 5 and 16 percentage points. These estimates parallel the suggestive evidence in Table 3 of a reduced likelihood of 2012 APSA papers being posted in SSRN, however they do not appear to be an artefact of the former effect. To check for this we also created an indicator for whether the paper was found online, but coded as zero conference papers found on Google Scholar such that SSRN was the only source for the paper.[18] The diff-in-diff estimates for this outcome are presented in Column 6: the coefficients being qualitatively similar to and only slightly smaller in magnitude than those in Column 5.

Table 4

In Table 5, we present results for longer-run counts of citations. Four years after the 2012 meetings, the 2012 APSA coefficients are generally larger in magnitude, but imply similar relative conference effects.[19] For example, 14.5 percent of 2012 APSA papers received at least one citation within four years, so the estimated impact of 5.7 percentage points, as reported in Column 1 Row 2, implies that the conference would have increased this likelihood by 39 percent. The estimated effects remain statistically significant for the likelihood of an article being cited at least once or twice, but not for the likelihood of being cited at least five times.[20]

Table 5

The results both for downloads and for citations largely support the hypothesis that conferences increase the visibility of presented papers. The estimates indicate that the conference presentation leads to 4–7 additional downloads and increases the likelihood of the paper being cited by around 5.7 percentage points (based on estimates from Equation 1, in Table 5, Row 2). These effects could arise through mechanisms of maturation or of advertisement. In Table 3, we find some evidence that the 2012 APSA meeting cancellation affected the chance of an article being posted in SSRN, and the results in Table 4 indicate that 2012 APSA papers became less likely to have any version online, even two years after the conference. This is suggestive evidence for a maturation effect: the conference seems to be affecting the likelihood that a project endures or progresses, so a paper develops to a stage that is ready to be made publicly available.

As a first indication as to whether advertisement effects are also in place, we look at the identity of the citing author, from citations observed four years after the 2012 meetings. A maturation effect may be expected to lead to increased citations from all academics, whilst an

advertisement effect may be expected to lead, disproportionately, to increased citations from academics who were in the conference.

The estimates for the diff-in-diff coefficients and outcome averages are described in Table 6, in which we use, as dependent variable, indicators for whether a conference paper became cited by at least one other academic in the conference, at least one academic within the same session (that is the chair, discussant or another presenter) in the conference, and at least one academic not in the conference. We show results for the most complete specifications (analogous to Table 5, Rows 2 and 3). In Column 1, we show OLS results and in Column 2, we present estimates from specifications adding covariates for author-fixed-effects. The estimated coefficients for the impact of the 2012 APSA meeting are negative, but are only statistically significant in regressions that control for author-fixed-effects. The estimated effect on being cited by academics not in the conferences has the lowest p-value (p-value<0.05) and indicates an impact of 7.5 percentage points. The impact for being cited by academics in the conference (Row 1) is only significant at the 10 percent level, and indicates a decrease of 5.3 percentage points. These two impacts are very similar as proportions (approximately 45 percent) of the means for the respective dummy variables, so there is altogether no evidence—from the comparison of coefficients in Rows 1 and 2—of an advertisement effect. However, it is worth noting that the estimated effect on the likelihood of being cited by an academic within the same session, whilst also only significant at the 10 percent level, represents a far higher proportion (approximately 100 percent) of the mean for this variable. This hints at a possibility of advertisement specifically between the participants in a session. We explore further evidence for this when we next consider heterogeneities in the conference effect.

Table 6

B. Heterogeneous Effects by Session and Authorship

We consider heterogeneity in the conference effect in two dimensions. First, we consider: *which sessions are most beneficial?* We examine whether the assignation of a highly-cited academic (henceforth, a "star-academic") to a conference session—as a chair, discussant, or presenter—determines the impact of the conference in the paper to be presented. Then, we consider: *who benefits?* We investigate whether and how the conference effect varies by academics' institutional ranking and by measures for their experience and existing profile.

It is well-documented that highly productive academics generate powerful peer effects in science (Azoulay, et al. 2010; Oettl, 2012). In the context of conferences, a star-academic might be expected to induce both maturation and advertisement effects. First, he or she may provide high-quality comments to presenters of work-in-progress. This seems particularly likely when the star-academic is assigned as a discussant or chair in the session. Secondly, star-academics may attract a larger audience to the session. This is perhaps most likely when the star-academic is an author of a presenting paper.[21] Using WoS data, we identified highly-cited authors in political science and traced these back among the conference participants.[22] In Table A10 in the Online Appendix, we provide summary statistics for the distribution of star-academics among participants.

We consider four session categories based on the role of the star-academics in the session, that is sessions in which: (i) the chair and/or discussant is a star (*disc_chair_star*), (ii) an author of a presenting paper (*author_star*) is a star, (iii) the chair/discussant *and* an author of a paper are stars (*author_disc_chair_star*), and (iv) no star-academic is assigned a role (*norole_star*). It should be noted that both academic meetings tend to assign discussant and chair roles to academics that are not authors of presenting papers, so categories (i), (ii) and (iii) are separate.

It is possible that conference organizers allocate more promising authors/papers to sessions with high-profile discussants or chairs. Since our intent is to identify differential effects due to the presence of the star-academic (rather than on characteristics that explain the allocation of papers to high-profile sessions), we focus on the most complete specifications, including the full set of controls and author-fixed-effects.

In Table 7, Panel A, we repeat average impacts reported in Table 5, Row 3. In Panel B, we analyse the impact of conferences decomposed by type of session using the pooled data and splitting the 2012 APSA indicator among the four categories above. In these regressions, we also include indicators for session type, four sets of session type-APSA year specific trends, and an indicator for whether the paper is authored by a star-academic. Each Column in Panel B reports results from a separate regression. We detect statistically significant coefficients for conference impacts in determining at least one or two citations (Columns 1 and 2) for most of the sessions. It is noticeable that papers assigned to sessions with star-academics in multiple roles (as discussant/chair and as a presenting author), seem to be the ones more harmed by the 2012 APSA meeting cancellation. This is perhaps not surprising: we would expect these sessions to confer the greatest benefits, both in terms of visibility and comments. Although the diff-in-diff coefficients are largest for this group, a test for difference across coefficients only shows statistically significant differences between these highest-profile sessions (*author_disc_chair_star*) and sessions where a star-academic has no role as discussant or chair (*author_star* and *norole_star*) and then only for impact in determining at least ten citations and for being cited by academics not in the conference. This may be seen as suggesting that the key mechanism underlying these differential effects is the feedback provided by the star-academic.[23]

It is interesting to note that the coefficients for effects of conferences in determining citations from academics in the same session (Column 7)—academics who will have seen the

paper presented, in the occurring conferences, and who are also likely to have the most closely-related research—are broadly similar across session types. They are only statistically significant (at the 5 percent level) for papers assigned to sessions where star-academics have no role: these being the most common sessions, accounting for 62.4 percent of conference papers. This somewhat reinforces the suggestive evidence noted in the previous section that conferences have an informational and advertisement role within and between the participants in a session.

Table 7

We may also expect some heterogeneity by authorship of conference effects. A conference gathers a group of unpublished articles. In its absence, any article has an ex-ante expected readership, based (at least in part) on its authors' characteristics: their institutional affiliation (Oyer, 2006; Kim et al. 2009), the existing visibility of their previous papers, and so forth. We therefore investigate whether there are differential conference effects by such characteristics. Do conferences help “the weak” or the “the strong"? For this analysis, we use article-level data and split the data based on various authors' characteristics: (i) institutional affiliation, (ii) citations of published papers,[24] (iii) number of recent publications,[25] and (iv) whether an author has a recent top-quartile publication.[26]

In Table 8 we look for heterogeneous effects from subsamples divided by these four characteristics, and using as outcome, longer-term citation (four years after the 2012 conference). Each entry reports estimates for the key diff-in-diff coefficients. The estimates for the effect of the 2012 APSA meeting cancellation on citations are only negative and statistically significant for articles whose authors are affiliated to an institution outside the top 10 (Rows 1–4, Columns 1–3). Curiously, the point estimates for articles whose authors are in a top 10

institution are positive (possibly suggesting a substitution of citations across authors due to conferences), but the coefficients are very largely not significant. Authors affiliated to mid-tier institutions became less likely to accumulate at least ten citations, and authors affiliated to institutions outside the top 100 became less likely to receive at least one citation, as a consequence of the cancellation.

Articles authored by academics with no publications, or with no citations (of published papers), or with no top publications, also became less likely to receive at least one citation. The group of papers authored by academics with one or two previous publications became—with the largest coefficients we observe—less likely to receive at least five or at least ten citations due to the 2012 APSA meeting cancellation. For authors in all these groups, comparing the coefficients in Rows 5, 6 and 7, there is no observable tendency for the conference-generated citations to be gained largely from academics within the conference (or conference session) as opposed to in the outside population. It appears that the academics with lower and intermediate ex ante likelihoods for gathering citations—less experienced and affiliated to institutions outside the top 10—are the main beneficiaries of the overall conference effect. Moreover, for these groups the mechanism is mainly one of maturation.

For articles authored by academics in the groups with highest ex ante prospects—those with more than two previous publications, or publications that have been cited, or that have a publication in a top journal—the pattern of conference effect seems quite different. For this group, though the 2012 APSA coefficients are generally negative, they are not generally statistically significant. However, statistically significant effects are then consistently observed in the likelihood of receiving a citation from another academic in the same conference session. This seems to provide a fairly compelling corroboration for the evidence in Tables 6 and 7, that an advertisement effect occurs within session participants. And the beneficiaries of this

advertisement effect appear to be authors with relatively high levels of experience or existing profile.

Table 8

V. Conclusion

By exploiting a natural experiment, we have provided estimates for the effects of conferences on articles' visibility and academic impact. To the best of our knowledge, no previous analysis has applied a compelling identification strategy to this issue; and the issue itself is of considerable importance, because significant resources across all research fields in academia are apportioned to organising and attending such events.[27]

Using articles accepted in a comparator conference as a baseline group for articles in the American Political Science Association Annual Meeting, our diff-in-diff analysis suggests that a conference increases short-run visibility (as indicated by working paper downloads) and moreover boosts the likelihood of a paper becoming cited: by three percentage points after two years and by five percentage points after four years.

The gains are most noticeable for less prominent authors: those who are not in the very top institutions, and academics (generally, early in their career) who do not have previous papers that are cited or published in top journals. For these academics the conference effect seems to be driven by “maturation”: the presented paper improving and progressing as a consequence of the personal interactions within the conference, these complementing—perhaps—similar processes that occur within an author's own institution.

However, for higher profile authors we detect an “advertisement effect”, with the conference presentation leading to a decisive increase in the likelihood of the conference paper becoming cited by other participants in the same session. The gains may be accruing to this group due to a correlation between paper quality and an author's recent publications, or due to a “Matthew effect” of accumulated advantage. By our results, the catalyst for an advertisement benefit could lie either in the strength of the paper, or in the perceived credentials of the author. But, either way, conferences seem to be facilitating a direct transmission of knowledge between academics.

Of course, our analysis is of one specific meeting: a large political science conference, with its own characteristics. But it is a reasonably modest step to suppose that in many respects the results will generalize to other conferences. Each academic field has its own character, but we might also expect to find resemblances, especially between political science and other social sciences. Indeed, many of the papers in the APSA meeting lie on the intersections between politics, economics, sociology, psychology, law and management science. Most conferences are much smaller than that which we have analysed, but many offer a very similar within-session experience. In less cognate disciplines, the differences in conference format and function may be larger. For example, in biomedical sciences conferences are more numerous, and are often arranged to facilitate interactions with related industries (see Ioannidis, 2012). Practices of citation and collaboration also differ. We therefore cannot be sure if the impacts and mechanisms associated with meetings in such fields will be the same.

Where the APSA meeting may differ from many other conferences, even in social science, is in the assignation of a discussant to every session, and in the high proportion of early-career academics attending (reflected, in Table 1, by 46.5 percent of papers being authored by academics without previous publications). We can expect these differences to have affected the relative roles of the maturation and advertisement functions of the conference. In light of our

results, we may suppose that in other meetings—without discussants but with a higher proportion of experienced academics—the importance of the advertisement effect will be greater.

Historically—in the era preceding digital communication—the importance of scientific meetings as a forum for academics to discover each other's work seems clear. A compelling demonstration is provided by Iaria et al. (2018), who show consequences for knowledge-flow and scientific productivity arising from an interruption in opportunities to attend international scientific meetings (combined with increased delays in delivery of international journals) during and after the First World War. However, in the last thirty years the internet has transformed opportunities for academics to access working papers and to correspond (Agrawal el. al. 2008; Ding et. al. 2010). It is then reasonable to ask whether face-to-face interaction, as facilitated by the conference setting, continues to influence the flow of academic understanding. Our findings indicate that it does.

Table 1
Article Characteristics: Averages

	ALL	APSA	MPSA
Number of authors	1.36	1.37	1.36
Solo-authored	70.9%	71.2%	70.7%
Affiliation rank			
[1, 10]	11.8%	12.4%	11.3%
[11, 100]	39.9%	41.3%	38.9%
[101, ∞)	48.3%	46.2%	49.8%
Any author has a publication	43.7%	53.5%	36.8%
(No. publications)*(avg. impact factor)	2.90	3.73	2.31
Any author has a paper in SSRN	16.2%	19.9%	13.5%
n	29,142	12,070	17,072

Notes: Observations are at the article level. We use institution rankings from Hix (2004) and use the highest-ranking affiliation among the article authors. The variable (no. publications)*(avg. impact factor) refers to the total number of publications by the article authors, multiplied by the average journal impact factor for these publications.

Table 2
Articles' Outcomes: Summary Statistics

	Mean	Stand. Dev	Min	Max	No. of Observations		
					Total	APSA	MPSA
PANEL A: SSRN Data							
No. of SSRN downloads (3 years after)	9.14	55.74	0	4,437	29,142	12,070	17,072
Posted in SSRN (3 years after)	9.59%	0.29	0	1	29,142	12,070	17,072
No. of SSRN downloads if in SSRN (3 years after)	95.23	155.53	0	4,437	2,796	2,354	445
PANEL B: Google Scholar Data							
Considering first 3 Google Scholar hits							
Found in Google Scholar	27.3%	0.45	0	1	15,144	12,070	3,074
At least 1 citation (2 years after)	11.0%	0.31	0	1	15,144	12,070	3,074
At least 2 citations (2 years after)	8.0%	0.27	0	1	15,144	12,070	3,074
At least 5 citations (2 years after)	4.3%	0.20	0	1	15,144	12,070	3,074
At least 10 citations (2 years after)	2.4%	0.15	0	1	15,144	12,070	3,074
No. of citations (2 years after)	1.00	7.75	0	355	15,144	12,070	3,074
At least 1 citation (4 years after)	17.0%	0.38	0	1	15,144	12,070	3,074
At least 2 citations (4 years after)	12.9%	0.34	0	1	15,144	12,070	3,074
At least 5 citations (4 years after)	8.3%	0.28	0	1	15,144	12,070	3,074
At least 10 citations (4 years after)	5.7%	0.23	0	1	15,144	12,070	3,074
No of citations (4 years after)	3.93	50.27	0	3,134	15,144	12,070	3,074
Considering first 10 Google Scholar hits							
At least 1 citation (4 years after)	18.7%	0.39	0	1	15,144	12,070	3,074
At least 2 citations (4 years after)	14.3%	0.35	0	1	15,144	12,070	3,074
At least 5 citations (4 years after)	9.4%	0.29	0	1	15,144	12,070	3,074
At least 10 citations (4 years after)	6.5%	0.25	0	1	15,144	12,070	3,074
No. of citations (4 years after)	4.88	69.75	0	5,311	15,144	12,070	3,074

Notes: Observations are at the article level. In Panel A, "three years after" refers to 39 months after the 2012 conference dates. This panel uses the full article sample (with all of the MPSA papers). In Panel B, "two years after" and "four years after" refer to 24 and 48 months after the 2012 conference dates. This panel uses the main article sample (with 20 percent of the MPSA papers). The Google Scholar search is explained in Section III.B.4. When considering the first three Google Scholar hits, citation counts are used from the first paper, if there is any, among the first three hits, that matches (by criteria explained in the Section III.B.4) in title and authorship with the conference paper. When considering the first ten Google Scholar hits, we used the first such paper among the first ten hits.

Table 3

Effects of Conferences on Articles' Visibility: SSRN Outcomes

	Outcomes	2012 x APSA [1]	*n*	2012 x APSA [2]	*n*	2012 x APSA [3]	*n*
[1]	No. of downloads (all papers)	-5.3509 [1.5684]***	29,101	-5.0827 [1.5770]***	29,035	-4.4649 [1.7089]***	21,524
[2]	Posted in SSRN	-0.0225 [0.0136]*	29,101	-0.0209 [0.0136]	29,035	-0.0134 [0.0147]	21,524
[3]	No. of downloads (if in SSRN)	-26.9540 [13.8090]*	2,755	-22.0643 [13.9366]	2,747	-8.6627 [16.3347]	2,369
Excluding articles that appear in both APSA and MPSA meetings							
[4]	No. of downloads (all papers)	-6.6393 [1.6456]***	27,120	-6.5112 [1.6537]***	27,056	-5.9000 [1.7837]***	19,910
[5]	Posted in SSRN	-0.0301 [0.0139]**	27,120	-0.0297 [0.0139]**	27,056	-0.0203 [0.01494]	19,910
[6]	No. of downloads (if in SSRN)	-46.1577 [19.7582]**	2,416	-41.6065 [19.8588]**	2,408	-34.9412 [25.2535]	2,090
Article covariates		No		Yes		Yes	
Matched sample		No		No		Yes	

Notes: Observations are at the article level, and outcomes are recorded "three years after" the 2012 conference dates. Columns 1 and 2 use the full article sample (with all of the MPSA papers), but exclude papers that accumulated more than 500 downloads. Column 3 uses the corresponding matched sample (explained in Section III.B.3 and described in Table A2). Each entry in Columns 1, 2 and 3 represents an estimate for the 2012 APSA coefficient from a separate regression. All regressions include controls for an indicator for whether the paper is in an APSA meeting, conference-year dummies and an APSA specific year trend. Regressions in Columns 2 and 3, also include covariates for the number of authors in the paper, the total number of publications by the article authors multiplied by the average journal impact factor, an indicator for whether any author had a previous paper posted in SSRN, and affiliation dummies (using the highest ranking affiliation among the article authors). Robust standard errors are in brackets.

*** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level.

Table 4

Effects of Conferences on Articles' Visibility: Google Scholar Outcomes (Two years after 2012 conferences)

			2012 x APSA						
		Dependent variable:	>=1 citation	>=2 citations	>=5 citations	>=10 citations	In Google Scholar	In Google Scholar exc. SSRN	*n*
			[1]	[2]	[3]	[4]	[5]	[6]	
	Sample	Article Controls							
[1]	All	None	-0.0386 [0.0185]**	-0.0387 [0.0155]**	-0.0223 [0.0108]**	-0.0062 [0.0083]	-0.0554 [0.0260]**	-0.0477 [0.0216]**	15,144
[2]	All	Article covariates and affiliation fixed effects	-0.0333 [0.0186]*	-0.0340 [0.0156]**	-0.0192 [0.0111]*	-0.0042 [0.0085]	-0.0584 [0.0263]**	-0.0435 [0.0218]**	15,082
[3]	All	Article covariates and author fixed effects	-0.0824 [0.0256]***	-0.0719 [0.0226]***	-0.0454 [0.0162]***	-0.0132 [0.0125]	-0.1100 [0.0337]***	-0.0788 [0.0277]***	20,773
[4]	Exc. if in both conferences	Article covariates and affiliation fixed effects	-0.0277 [0.0188]	-0.0263 [0.0156]*	-0.0112 [0.0115]	0.0013 [0.0087]	-0.0388 [0.0268]	-0.0293 [0.0225]	13,909
[5]	Matched	Article covariates and affiliation fixed effects	-0.0389 [0.0268]	-0.0194 [0.0221]	0.0042 [0.0152]	0.0036 [0.0118]	-0.0762 [0.0387]**	-0.0308 [0.0288]	6,198
[6]	Matched	Article covariates and author fixed effects	-0.1265 [0.0437]***	-0.0901 [0.0363]**	-0.0541 [0.0257]**	-0.0287 [0.0198]	-0.1621 [0.0592]***	-0.1410 [0.0472]***	8,556

Notes: Outcomes are recorded "two years after" the 2012 conference dates, and consider the first three Google Scholar hits. Each entry represents an estimate for the 2012 APSA meeting coefficient from a separate regression, using the main article sample. Observations are at the article-author level in Rows 3 and 6, and at the article level in the remaining rows. All regressions include controls for an indicator for whether the paper is in an APSA meeting, conference-year dummies and an APSA specific year trend. Article covariates include the number of authors in the paper, the total number of publications by the article authors multiplied by the average journal impact factor, and an indicator for whether any author had a previous paper posted in SSRN. The matched sample is explained in Section III.B.3 and described in Table A2. Robust standard errors are in brackets. *** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level.

Table 5

Effects of Conferences on Articles' Visibility: Google Scholar Outcomes (Four years after 2012 conferences)

		Dependent variable:	2012 x APSA >=1 citation [1]	>=2 citations [2]	>=5 citations [3]	>=10 citations [4]	*n*
	Sample	Article Controls					
[1]	All	None	-0.0660 [0.0283]**	-0.0542 [0.0260]**	-0.0297 [0.0223]	-0.0249 [0.0191]	15,144
[2]	All	Article covariates and affiliation fixed effects	-0.0567 [0.0282]**	-0.0435 [0.0259]*	-0.0230 [0.0222]	-0.0202 [0.0191]	15,082
[3]	All	Article covariates and author fixed effects	-0.0913 [0.0362]**	-0.0741 [0.0325]**	-0.0364 [0.0293]	-0.0378 [0.0255]	20,773
[4]	Exc. if in both conferences	Article covariates and affiliation fixed effects	-0.0576 [0.0289]**	-0.0400 [0.0266]	-0.0194 [0.0229]	-0.0181 [0.0195]	13,909
[5]	Matched	Article covariates and affiliation fixed effects	-0.0473 [0.0363]	-0.0283 [0.0326]	-0.0121 [0.0273]	-0.0125 [0.0233]	6,198
[6]	Matched	Article covariates and author fixed effects	-0.0882 [0.0564]	-0.0865 [0.0513]*	-0.0647 [0.0442]	-0.0499 [0.0376]	8,556

Notes: Outcomes are recorded "four years after" the 2012 conference dates, and consider the first ten Google Scholar hits. Each entry represents an estimate for the 2012 APSA meeting coefficient from a separate regression, using the main article sample. Observations are at the article-author level in Rows 3 and 6, and at the article level in the remaining rows. All regressions include controls for an indicator for whether the paper is in an APSA meeting, conference-year dummies and an APSA specific year trend. Article covariates include the number of authors in the paper, the total number of publications by the article authors multiplied by the average journal impact factor, and an indicator for whether any author had a previous paper posted in SSRN. The matched sample is explained in Section III.B.3 and described in Table A2. Robust standard errors are in brackets.
*** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level.

Table 6
Effects of Conferences on Who Cites the Article

Outcomes		OLS		Fixed Effects	
		Mean dep. variable	2012 x APSA [1]	Mean dep. variable	2012 x APSA [2]
Cited by at least one academic ...					
[1]	... in the conference	0.1072	-0.0159 [0.0231]	0.1169	-0.0532 [0.0310]*
[2]	... in the same session	0.0186	-0.0115 [0.0077]	0.0205	-0.0237 [0.0126]*
[3]	... not in the conference	0.1639	-0.0409 [0.0269]	0.1759	-0.0757 [0.0350]**
n		15,082		20,773	

Notes: Observations are at the article level, and outcomes are recorded "four years after" the 2012 conference dates. Columns 1 and 2 use the full article sample (with all of the MPSA papers), but exclude papers that accumulated more than 500 downloads. Column 3 uses the corresponding matched sample (explained in Section III.B.3 and described in Table A2). Each entry in Columns 1, 2 and 3 represents an estimate for the 2012 APSA coefficient from a separate regression. All regressions include controls for an indicator for whether the paper is in an APSA meeting, conference-year dummies and an APSA specific year trend. Regressions in Columns 2 and 3, also include covariates for the number of authors in the paper, the total number of publications by the article authors multiplied by the average journal impact factor, an indicator for whether any author had a previous paper posted in SSRN, and affiliation dummies (using the highest ranking affiliation among the article authors). Robust standard errors are in brackets.
*** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level.

Table 7

Heterogeneous Conference Effects by Star-Academic Participation in the Session

Outcomes:	>=1 citation	>=2 citations	>=5 citations	>=10 citations	Cited by at least one academic ...		
					... not in the conference	... in the conference	... in the same session
	[1]	[2]	[3]	[4]	[5]	[6]	[7]
PANEL A							
[1] 2012 x APSA	-0.0913	-0.0741	-0.0364	-0.0378	-0.0757	-0.0532	-0.0237
	[0.0362]**	[0.0325]**	[0.0293]	[0.0255]	[0.0350]**	[0.0310]*	[0.0126]*
PANEL B							
[2] 2012 APSA x *author_disc_chair_star*	-0.1530	-0.1293	-0.0677	-0.0942	-0.1514	-0.1169	-0.0253
	[0.0548]***	[0.0495]***	[0.0429]	[0.0371]**	[0.0527]***	[0.0468]**	[0.0223]
[3] 2012 APSA x *disc_chair_star*	-0.0814	-0.0796	-0.0528	-0.0435	-0.0924	-0.0752	-0.0033
	[0.0614]	[0.0550]	[0.0470]	[0.0396]	[0.0578]	[0.0525]	[0.0211]
[4] 2012 APSA x *author_star*	-0.0703	-0.0737	-0.0226	-0.0289	-0.0488	-0.0269	-0.0146
	[0.0406]*	[0.0369]**	[0.0334]	[0.0295]	[0.0399]	[0.0353]	[0.0147]
[5] 2012 APSA x *norole_star*	-0.0937	-0.0657	-0.0334	-0.0251	-0.0715	-0.0505	-0.0272
	[0.0385]**	[0.0342]*	[0.0304]	[0.0264]	[0.0367]*	[0.0326]	[0.0135]**
n				20,773			

Notes: Observations are at article-author level, and are recorded "four years after" after the 2012 conference dates. Each Column in each Panel provides estimates for the 2012 APSA meeting from a separate regression. Indicators (i) "author_disc_chair_star", (ii) "disc_chair_star", (iii) "author_chair_star" and (iv) "norole_star", respectively denote articles in a session in which star-academics: (i) are assigned as a chair/discussant and as an author of a paper, (ii) are assigned only as a chair/discussant, (iii) are assigned only as an author of a paper, or (iv) is assigned no role. Regressions in Panel A include controls for an indicator for whether the paper is in an APSA meeting, conference-year dummies, an APSA specific year trend, covariates for the number of authors in the paper and for the total number of publications by the article authors multiplied by the average journal impact factor, an indicator for whether any author had a previous paper posted in SSRN, and author-fixed effects. Regressions in Panel B include an indicator for whether the paper is in an APSA meeting, conference-year dummies, four indicators for session type, four APSA-session type specific year trends, an indicator for whether the article is authored by an star-academic, covariates for the number of authors in the paper and for the total number of publications by the article authors multiplied by the average journal impact factor, an indicator for whether any author had a previous paper posted in SSRN, and author-fixed-effects. Robust standard errors are in brackets.

*** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level.

Table 8
Heterogeneous Conference Effects by Authorship

PANEL A	2012 x APSA				
	Affiliation rank			Citations of pub. papers	
Outcomes	1-10 [1]	11-100 [2]	> 100 [3]	Zero [4]	≥ 1 [5]
[1] At least 1 citation	0.1240	-0.0743	-0.0890	-0.0713	-0.0434
	[0.0949]	[0.0442]*	[0.0389]**	[0.0317]**	[0.0598]
[2] At least 2 citations	0.1017	-0.0749	-0.0594	-0.0544	-0.0277
	[0.0873]	[0.0397]*	[0.0364]	[0.0283]*	[0.0571]
[3] At least 5 citations	0.1029	-0.0335	-0.0469	-0.0197	-0.0404
	[0.0794]	[0.0331]	[0.0313]	[0.0243]	[0.0493]
[4] At least 10 citations	0.1015	-0.0618	-0.0155	-0.0091	-0.0470
	[0.0699]	[0.0276]**	[0.0273]	[0.0208]	[0.0424]
Cited by at least one academic ...					
[5] ... not in the conference	0.1023	-0.0490	-0.0718	-0.0519	-0.0285
	[0.0875]	[0.0418]	[0.0379]*	[0.0303]*	[0.0573]
[6] ... in the conference	0.1446	-0.0580	-0.0227	-0.0072	-0.0510
	[0.0856]*	[0.0354]	[0.0313]	[0.0255]	[0.0508]
[7] ... in the same session	0.0031	-0.0218	-0.0076	0.0016	-0.0399
	[0.0258]	[0.0142]	[0.0086]	[0.0079]	[0.0186]**
n	1,841	6,146	7,095	9,953	5,129
PANEL B	No. of publications before the conference			Author has top publication?	
Outcomes	Zero [1]	1 or 2 [2]	> 2 [3]	No [4]	Yes [5]
[1] At least 1 citation	-0.0652	-0.0610	-0.0537	-0.0645	-0.0671
	[0.0342]*	[0.0702]	[0.0689]	[0.0306]**	[0.0718]
[2] At least 2 citations	-0.0474	-0.0671	-0.0192	-0.0478	-0.0501
	[0.0304]	[0.0637]	[0.0663]	[0.0276]*	[0.0685]
[3] At least 5 citations	-0.0058	-0.1133	0.0050	-0.0179	-0.0472
	[0.0253]	[0.0549]**	[0.0601]	[0.0235]	[0.0597]
[4] At least 10 citations	0.0126	-0.1082	-0.0247	-0.0108	-0.0507
	[0.0215]	[0.0485]**	[0.0515]	[0.0202]	[0.0520]
Cited by at least one academic ...					
[5] ... not in the conference	-0.0438	-0.0893	-0.0082	-0.0478	-0.0406
	[0.0324]	[0.0670]	[0.0671]	[0.0292]	[0.0690]
[6] ... in the conference	-0.0051	-0.0248	-0.0398	-0.0073	-0.0680
	[0.0266]	[0.0582]	[0.0601]	[0.0244]	[0.0626]
[7] ... in the same session	0.0076	-0.0031	-0.0597	0.0016	-0.0531
	[0.0079]	[0.0166]	[0.0242]**	[0.0075]	[0.0246]**
n	7,451	3,412	4,219	11,331	3,751

Notes: Observations are at article level, and are recorded "four years after" after the 2012 conference dates. Each Column in each Panel provides estimates for the 2012 APSA meeting from a separate regression. All regressions include controls for an indicator for whether the paper is in an APSA meeting, conference-year dummies, an APSA specific year trend, covariates for the number of authors in the paper and an indicator for whether any author had a previous paper posted in SSRN. Regressions in Panel A, Columns 1–3 also include controls for the total number of publications by the article authors multiplied by the average journal impact factor. Regressions in Panel A, Columns 4–5 also include controls for the total number of publications by the article authors multiplied by the average journal impact factor and author-affiliation dummies. Regressions in Panel B also include controls for author-affiliation dummies. Robust standard errors are in brackets.
*** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level.

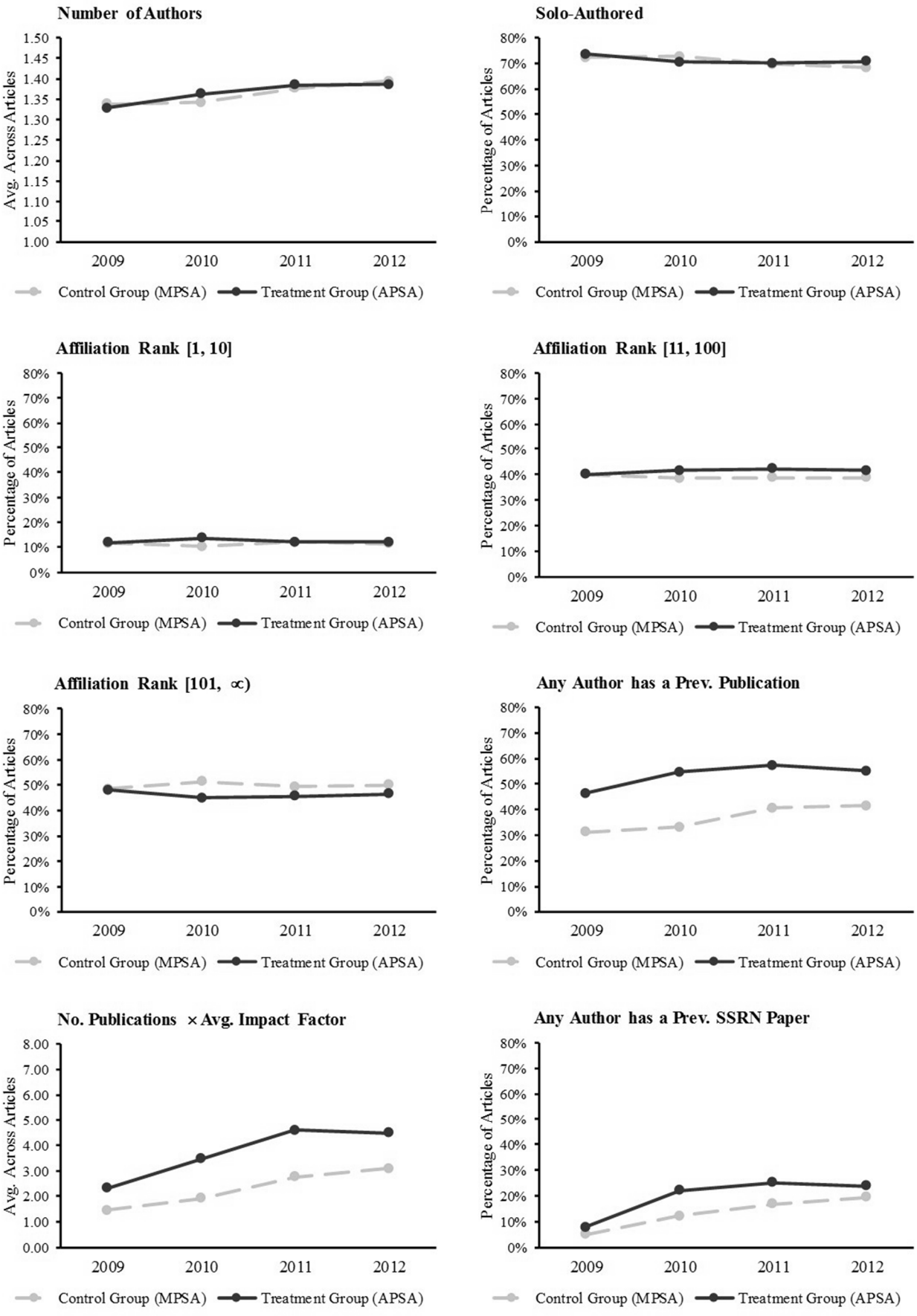

Figure 1 *Article Characteristics*

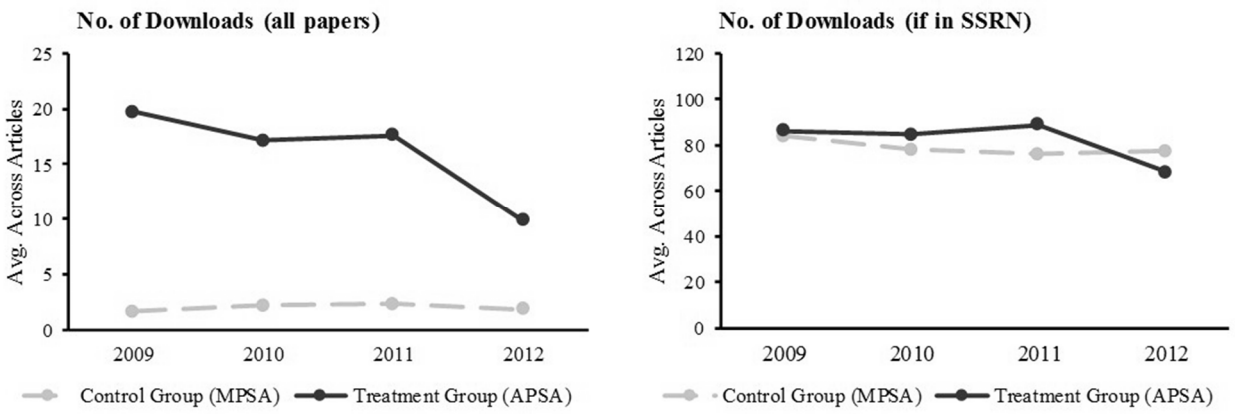

Figure 2 *Article Outcomes: SSRN Data*

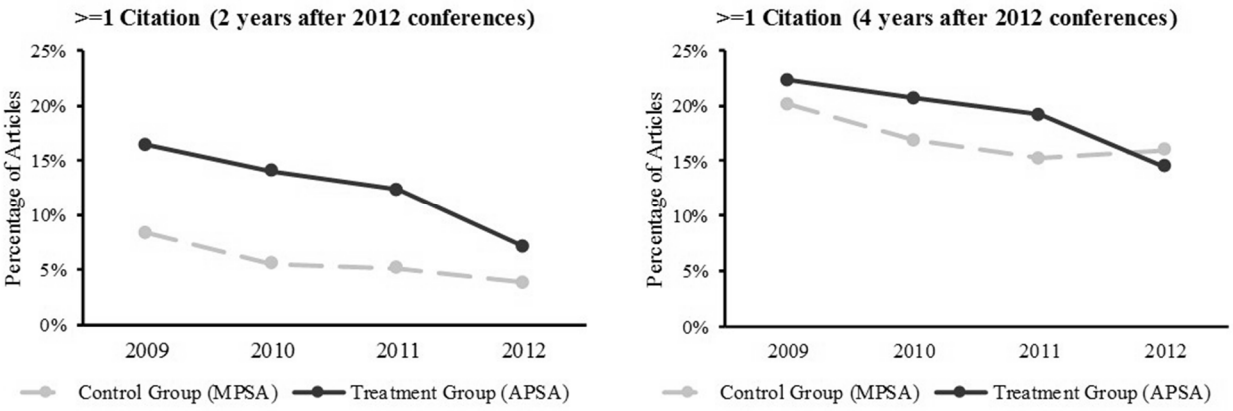

Figure 3 *Article Outcomes: Google Scholar Data*

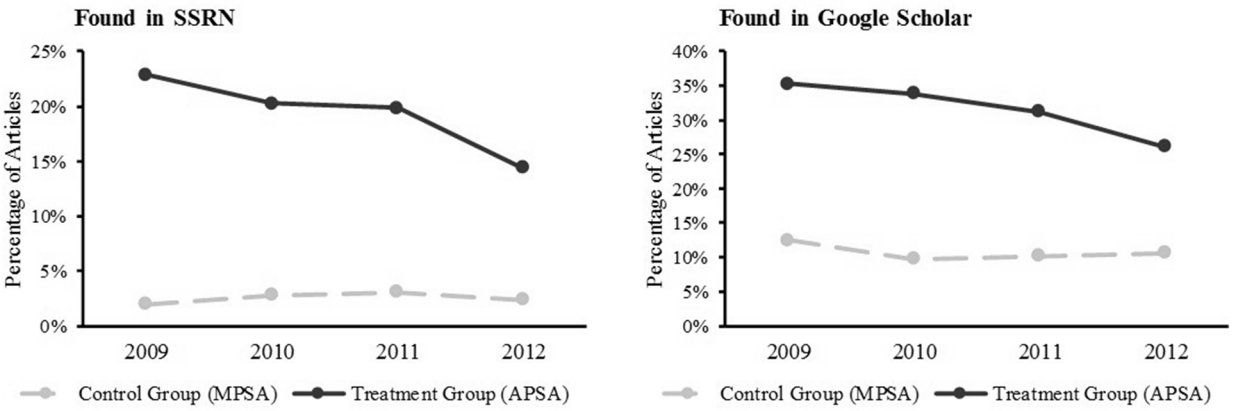

Figure 4 *Article Outcomes: Online Availability of Working Paper*

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[1] The American Economic Association advertised close to 300 meetings in 2014, and in the field of medical science there is an estimated 100,000 meetings per year (Ioannidis, 2012).

[2] One paper does achieve this: Blau et al. (2010) evaluate the impacts of CeMENT—a mentoring workshop for female assistant professors, at which participants also have a chance of having a working paper discussed by a small group of peers. However, to the extent that Blau et al. (2010) hint at any generalizability, their suggestions are with respect to other mentoring interventions rather than to other conference settings.

[3] In other words, conferences could plausibly either mitigate or exacerbate any "famous-get-famous effect" (or "Matthew effect"). See Merton (1968), Salganik et al. (2006), Azoulay et al. (2013).

[4] Winnik et al. (2012) and Castaldi et al. (2015) compare "accepted" vs. "rejected" papers, so a selection effect (the extent to which the conference committee selects for papers that are likely to have greater impact) is likely to be a confounder to any conference effect. Chai and Freeman (2017) conduct a more controlled analysis, by comparing patterns of collaboration and citations among attendees of the Gordon Research Conferences with patterns among a matched group of non-conference attendees, and instrumenting conference attendance by individuals' distance to the conference.

[5] Waldinger (2010) finds that doctoral students in Germany whose departments lost eminent scientists during the Nazi era were—by various career metrics—consequently less successful; Azoulay et al. (2010) show that scientists publish fewer papers, or papers of lower quality, after a "superstar" co-author dies unexpectedly; Borjas and Doran (2015) document that mathematicians who became geographically separated from high-quality co-authors during the post-1992 exodus of scientists from the Soviet Union became less productive; and Borjas, Doran and Shen (2018) find that a positive supply shock of Chinese graduate students into American universities led to increased productivity of Chinese-American advisors (who tended to work with the students from China) and to commensurably reduced productivity of American advisors of non-Chinese heritage.

[6] It should be noted that the conference papers are typically working papers, usually with no record of existence before the conference (indeed, as shown in Table 2, only twenty-seven percent are found in Google Scholar two years after the 2012 conferences), so an analysis within paper, before and after the conference, is not possible.

[7] From the WoS, we assembled all articles published in the 155 WoS Political Science journals and in the top 20 WoS journals in Economics, Sociology, Law, History, and International Relations from 2004 to 2011. From the SSRN, a set of working papers comprising all papers posted in the SSRN Political Science Network from January 1996 to September 2015. These sets include 113,895 working papers and 115,188 published papers respectively.

[8] For participants in the conferences taking place in 2009, we consider the window of calendar years 2004-2008. For conferences taking place in 2010, the window comprised years of 2005-2009, and so forth.

[9] In using this rule, we run into the issue of name ambiguity and possible misattribution of characteristics among participants. We conducted several checks to ensure that individuals' first and last name identifies uniquely conference authors with some previous history in SSRN, by crossing this information with unique SSRN author identifiers.

[10] One specific concern related to an early campaign against holding the 2012 APSA meeting in Louisiana, due to the state's refusal to recognize same-sex marriages. Within this campaign, 1,109 academics signed a petition advocating a boycott, approximately half of whom are in our dataset. It transpired that, indeed, very few (only 30) of these registered to attend the 2012 meeting in New Orleans. However, we find no evidence—as shown in Figure A1 in the Online Appendix—that the petitioners became, in turn, more likely to attend the 2012 MPSA instead (a potential threat to identification), or indeed that the petitioners differ in observables from the average conference participant in the occurring conferences. Petitioners and non-

petitioners do not differ in number of publications weighted by journal quality or in institutional ranking. These results are not shown in the paper, but are available under request.

[11] The CEM approach consists in a one-to-one match that assigns a pair of control-treatment observations, based on the exact matching on the joint support of a set of (selected) characteristics. Each individual characteristic is however, considered in coarse terms. In applying this methodology, we transformed all variables in Table 1 to a discrete form. The specific variables we use to determine the matching are: number of article authors, whether any article author has a previous publication, whether any article author has a previous working paper in SSRN, whether the highest affiliation rank is [1,10], [11,100] or $[101, \infty)$, and whether the accumulated number of publications weighted by journal impact factor is zero (56.3 percent of observations), (0,1.65], (1.65,3.802], (3.802,8.668], or $(8.668, \infty)$, (the last four ranges each being 25 percent of the non-zero observations).

[12] Outcomes were collected using commercial web-scraping providers. For the main sample, the service provider was Mozenda Inc., and for the full sample, an independent professional programmer.

[13] However, hits—from this first ten—were dropped if the conference paper had no citations. Therefore, in the later search outcomes we cannot differentiate between articles with zero citations and articles "not found in Google Scholar".

[14] Co-authored papers will appear as multiple observations: one for each of the authors.

[15] When examining data at the article-author level, 76.5 percent of papers are authored by academics that participated in multiple conferences among the eight that we observe.

[16] Results in Table 3 are based on the full article sample (with all of the MPSA papers), using outcomes recorded three years after the 2012 conferences. In the Online Appendix (Table A4) we show results based on the main sample (with 20 percent of the MPSA papers), as

recorded one year, two years and three years after the conferences. In Table A7 in the Online Appendix, we replicate results from Table 3, using a Poisson model.

[17] In principle, an alternative explanation could be that the 2012 APSA meeting cancellation particularly deterred the authors of stronger papers—with higher prospective downloads—from posting these in SSRN. In diff-in-diff regressions for the sample of articles in SSRN, using article covariates as dependent variables, we did not find evidence that the 2012 APSA articles posted in SSRN were less likely to have been authored by more experienced (published or better-published) academics, or that they differed systematically in number of authors.

[18] In Figure A3 in the Online Appendix, we show how we recovered this information from Google Scholar.

[19] The citation variables in Table 5 differ from Table 4 also because we use the first ten google scholar hits, instead of the first three google scholar hits. For a more controlled comparison, in Table A8 in the Online Appendix, we provide results for citations measured four years after the 2012 Meetings, but using only the first three google scholar hits.

[20] In addition to the analysis in Tables 4 and 5, in Table A9 in the Online Appendix, we present OLS results using the number of cites and the log of (1+cites) as dependent variables. We also present results from negative binomial and Poisson regressions explaining the number of articles' cites.

[21] Neither the APSA nor MPSA Programmes indicate who the presenting author is, in the case of a co-authored paper. However, as shown in Table 1, 70.9 percent of papers are solo-authored.

[22] We defined highly-cited academics as those whose number of citations falls into the top 2.5 percentiles based on publications in a window of five years preceding the conference.

[23] An alternative explanation could in principle be that citations are generated by *advertising to the star-academic*: that a star-academic will have greater propensity than others to

subsequently cite the papers he or she sees in the session. But this is not supported by the coefficients, or pattern of statistical significance, in regressions in which the dependent variable is an indicator for being cited by academics in the same session (Column 7).

[24] The data is decomposed here by Web of Science citations for publications prior to the conference. The difference between this measure and our outcome measure (Google Scholar citations) should be noted. Google Scholar citations capture more types of scientific work (including books and unpublished papers).

[25] We find similar results when the decomposition is based instead on publications weighted by journal impact factor.

[26] The cutoff is based on the top quartile impact factor journal for a sample of 155 journals in our WoS dataset, in 2008, that was approximately an impact factor of two.

[27] In addition to direct conference costs, recent studies (Green, 2008; Jena et al., 2015), focussing particularly on medical conferences, have noted and estimated other externalities associated with academic meetings.