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Citation Success: Evidence from Economic History Journal Publications

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Abstract

This study examines the determinants of citation success among authors who have recently published their work in economic history journals. Besides offering clues about how to improve one's scientific impact, our citation analysis also sheds light on the state of the field of economic history. Consistent with our expectations, we find that full professors, authors appointed at economics and history departments, and authors working in Anglo-Saxon and German countries are more likely to receive citations than other scholars. Long and co-authored articles are also a factor for citation success. We find similar patterns when assessing the same authors' citation success in economics journals. As a novel feature, we demonstrate that the diffusion of research – publication of working papers, as well as conference and workshop presentations – has a first-order positive impact on the citation rate.

Keywords: Citation Analysis, Scientific Impact, Bibliometrics, Research Diffusion, Poisson Regression

JEL Codes: A10, A11, A14, N10

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Introduction

Quantitative assessments of scholarly achievements are becoming progressively more widespread. The field of economic history is no exception. A number of important decisions, including the hiring and promotion of researchers, as well as project funding, are increasingly being based on assessments of scientific impact. Previous empirical studies (especially those undertaken in the field of economics) show that the single most useful tool for analysing a scholar's research performance is *citation analysis*. That is, an account of the number of citations received by a scholar in articles published by his or her field colleagues.[1]

Citation analysis serves many useful purposes. Among these is the ability to shed light on the state of an academic discipline. In both the US and the UK economic history has, for some decades, been a declining academic field. At present, in the US there are no specialist economic history graduate programmes at any mainstream university. Instead, economic history is taught as a special-field component of regular economics Ph.D. programmes at institutions including the University of California at Berkeley, Harvard, and Yale. In the UK, the situation is no different. The past twenty years have witnessed the progressive closure of separate economic history programmes, with the integration of the discipline into either history or economics departments. Only the LSE and the University of Glasgow continue to run separate economic history departments, and there are virtually no Ph.D. students specialising in the subject outside of these institutions. Economic history in the US and the UK is thus effectively carried out by scholars employed in either economics or history departments, with separate economic history programmes existing only in a small number of European nations, particularly in the Nordic region, but also in Spain, Italy, and the Netherlands. Citation analysis enables us to establish whether the lack of separate economic history departments in the US, as well as the decline in economic history programmes in Britain, is reflected in the scientific impact of the different types of departments, with economic history departments expectedly falling behind those of economics and history.

[1] For example, for the field of economics see Laband and Piette (1994), or Kalaitzidakis, Mamuneas and Stengos (2003). For economic history journals see Di Vaio and Weisdorf (2010).

Furthermore, while economic history may have declined as a discipline in Anglo-Saxon countries, the interest in economic history topics seems to be on the increase elsewhere. For example, in an editorial note of the *Journal of Economic History*, Price Fishback reports that the number of non-US topics has increased as a share of the total submissions to the journal (Fishback, 2011). During the years 2009–2010, the share of topics on the US was around 32%. Western Europe, including the UK, accounted for 43%, while other parts of the world each accounted for up to a remarkable 6%: Africa (5%), Asia and Pacific (5%), Eastern Europe (4%), Latin America including the Caribbean (6%), and the Middle East (4%). The fact that economic history has become a highly globalized academic field over the past few decades is confirmed by the distribution of economic historians across the globe. A recent study by Joerg Baten and Julia Muschallik estimates that there are currently over 8,000 economic historians world-wide, with Japan and China, astonishingly, providing more than a quarter of these, while the US and the UK provide only one fifth between them (Baten and Muschallik, 2010). Citation analysis is able to tell us how well the 'New World' of economic history is faring, in terms of scientific impact, by comparison with the more established 'Old World' of (especially) the Anglo-Saxon countries.

What is more, the field of economic history has often been criticized by the economics profession for not producing high-quality research. One of the most prominent examples is a paper written by Nobel-prize winner Douglas North, in which he criticizes his economic history colleagues for their incautious use of econometric techniques and statistical tools (North, 1965). Citation analysis can be used to determine whether or not his critique (and those of others) is valid. One way in which to test this is to analyse if economic historians appointed in economics departments produce research of a higher quality, judged by their scientific impact, than their colleagues employed in history or economic history departments.

In addition to shedding light on the state of the discipline of economic history, citation analysis can also inform us both about how conducive to citation success the personal characteristics of the authors of economic history articles are (such as their research experience, academic title, gender, etc) and about the importance of the role of bibliometric features in raising a study's citation rate (such as the length of an article and its number of co-authors). It can tell us if author citation success is primarily dependent on the quality of the research conducted, as measured by how

prestigious (i.e. highly ranked) the journals are in which the work is published.[2] It can tell us if citation success is influenced by the author's reputation, reflected by his or her academic appointment (full professorship at a prestigious university etc). And it can tell us whether there are yet further factors that can affect the citation rate, such as the diffusion of the author's work through academic presentations, or via access to the working paper versions of the studies conducted. Regardless of what the underlying factors are, it appears that any far-reaching conclusions based on crude citation counts require a firm understanding of the determinants of citation success.

Our study constitutes the first attempt to identify the factors underlying citation success based on research published in economic history journals.[3] This serves a dual purpose: one is to help scholars, editors and evaluators who deal with the topic of economic history to further understand what drives the size of a scholar's or a study's citation rate. The other is to evaluate the state of the discipline of economic history in light of its development during recent decades. More specifically, we attempt to examine the citation success of authors who have recently published their work in economic history journals.

To this end, we have studied 217 research articles, published during 2007 in the 13 journals that we have identified as having economic history as their main field (see the next section for a detailed description of the data). In our 'basic' sample we included all the authors and co-authors (450 in total) of articles that were cited in the 217 research articles. Next, we counted how many times these authors were cited and, for each of the cited authors, we have constructed a set of bibliometric variables extracted from the cited articles (including page length, self-citation, etc.) in order to identify the characteristics associated with citation success.

Where possible, we have also collected a 'rich' data sample which includes some additional information on the personal characteristics of the cited authors (325 in total). After constructing these data sets on authors, we have run a series of regressions where the dependent variable is the number of times an author was cited, and the independent variables were the bibliometric variables collected for the basic

[2] Indeed, the use and misuse of citations for assessing scholarly qualities has been a recurrent theme in the bibliometric literature (see, e.g., Bodenhorn, 2003; Mayer, 2004; van Dalen and Klamer, 2005).

[3] The field of economics, on the other hand, offers a few examples of such attempts. These include Laband (1990), Johnson (1997), Laband and Tollison (2000), Hilmer and Lusk (2003) and Ursprung and Zimmer (2007). Whaples (2002) offers an analysis similar to the present study, but he limits his research to articles published in the *Journal of Economic History*.

sample, and (separately) for the personal characteristics of the rich sample. We have concentrated on three main categories of determinants of citation success: (i) the bibliometric attributes of the published work (length of article, number of co-authors, self-citation rate, etc.); (ii) the author characteristics (research experience, academic degree, title, sex, affiliation, language of country of appointment, etc.); and, finally, (iii) the possible channels of diffusion of the author's work (number of academic presentations, number of individuals thanked in the acknowledgements, accessibility of working papers, etc.).

While some factors of citation success are specific to economic history, we find that most factors are shared with the discipline of economics. Comparable to economics, we find that the length of articles, as well as the number of co-authors (as measured by the number of citations of their works), correlates positively to an author's citation rate. Both relationships, however, are non-linear. An interesting contrast to the field of economics, however, is given by the fact that articles published in highly-ranked economic history journals do not generate statistically more citations than articles published in their lower-ranked counterparts. The message to authors, therefore, is that choice of academic outlet (higher- or lower-ranked journals) is not crucial for citation success.[4]

Turning to author-specific characteristics, we find that departmental affiliation and academic titles are crucial determinants of an author's citation rate. As expected, male authors, full professors, and authors appointed in economics departments in Anglo-Saxon countries all receive significantly more citations than others. The relatively poor performance of authors appointed at departments devoted *entirely* to economic history (a typical European constellation) is perhaps unsurprising in light of the lack of, or decline in, economic history programmes in recent years.

Finally – and here is the good news for authors who struggle to disseminate their work – an active diffusion of one's research, either through academic presentations at conferences and seminars, by asking peers for comments or publishing new papers on the internet, exerts a significantly positive influence on the author's citation success.

[4] This result should be interpreted with caution. In fact, in 2007 some important journals in economic history, like *European Review of Economic History* and *Cliometrica*, were not included yet in the Social Science Citation Index, which we use to rank the journals in our sample.

The effect varies somewhat across channels, but for each additional academic presentation the likelihood of getting an additional citation increases by 14%.

1 Data

1.1 The construction of the dataset

The data used for the empirical analysis conducted below come from several sources. The main source is a dataset collected by Di Vaio and Weisdorf (2010). This includes 657 citations appearing in 217 research articles published in 2007 by a set of international general-interest journals in economic history.[5] Following the so-called 'within-discipline' approach, the citations are produced by the journals in the sample itself, referring to works that were previously published in the same journals.[6]

For every author whose work was cited in 2007, we collect a number of bibliometric variables: citation rate (the total number of citations received);[7] self-citation rate (the total number of citations made by the author himself or his eventual co-authors); SSCI citation rate (the total number of citations received by articles published in journals included in the Social Science Citation Index);[8] average length of the article cited; average number of co-authors of the articles cited; and average citation rate of co-authors.[9] In this way, we construct a sample that contains bibliometric information for about a total of 450 authors, which we call our "basic" sample.

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[5] The journals are: *Annales: Histoire, Sciences Sociales; Australian Economic History Review; Cliometrica: Journal of Historical Economics and Econometric History; Economic History Review; European Review of Economic History; Explorations in Economic History; Indian Economic and Social History Review; Irish Economic and Social History; Jahrbuch für Wirtschaftsgeschichte; Journal of Economic History; Revista de Historia Económica / Journal of Iberian and Latin American Economic History; Rivista di Storia Economica; Scandinavian Economic History Review*.

[6] See Di Vaio and Weisdorf (2010) for further details.

[7] This is a crude measure of academic impact, which does not control for size or impact of journals as is common in the bibliometric literature. As shown by Henrekson and Waldenström (2011), however, the correlation across different impact measures based on either journal-impact scores or actual citations is quite high. Hence, we feel confident in using unadjusted citations as our main outcome measure.

[8] In 2007, these economic history journals were the *Economic History Review*, *Explorations in Economic History*, and the *Journal of Economic History*.

[9] This variable was constructed for each author by averaging the citation rate across his co-authors.

In addition, we collected the following information from the authors' professional websites (if available):[10] the author's sex (male or female), region of employment (Anglo-Saxon, Latin, German-speaking, or Nordic), education (Ph.D. or other), academic title (full or associate professor), and departmental affiliation (economic history, economics, or history). We also include a measure of how the institution where the author is based is ranked among the top-200 universities listed in the *Sunday Times*' "World University Rankings".[11] These latter variables are valid at the time of citation, namely the year 2007. Accordingly, even though this sample is smaller, it is also richer in terms of information. It includes a total of 325 authors, and is referred to as our "rich" sample.

While our database is unique in its specific representation of economic historians worldwide, it is not flawless. For one thing, the data does not contain information regarding authors who were *not* cited in 2007 in the journals included in the sample. In other words, the results obtained below are conditional on authors being cited in a given year. Another drawback of the dataset consists in that we do not consider citations made to and from books, book chapters or other non-article items. Given that a fair share of citations made in the social and human sciences are not captured by journal articles (Hicks, 2004), our sample selection is potentially biased. Nonetheless, we have observed that economic historians tend to publish the main findings of their research in an economic history journal around the same time as their book is released. If this is indeed common practice, then we implicitly pick up references to the research that inspired the book, as these are repeated in the article. The potential bias is mitigated as a result.

In order to assess the citation success of economic historians outside the field of economic history, we also gathered supplementary data on citations of their work in 206 major economics journals recently survey by Kalaitzidakis, Mamuneas and Stengos (2010) as recorded by Google Scholar (of course, excluding those dealing with economic history).[12] Overall, during 2007 we found 138 citations to the 325 economic historians from the rich sample in our original economic history database.

[10] We consulted only 'official' websites, i.e. websites hosted by universities or research institutes.
[11] See the *Sunday Times*' "Higher Educational Supplement", November 9, December 2007.
[12] By focusing on only including citations coming from a specific set of economics journals, we were able to exclude any spurious citations or self-citations as are fairly common in Google Scholar. The collection was made in June-July 2011.

1.2 Data characteristics

The data contained in the two samples offer a broad representation of the citation rates of authors who publish their work in economic history journals – from the most cited authors, who receive ten or more citations in a year, to those who receive just a single citation. Figure 1 shows the frequency distribution of authors conditional on citations received. About half of all authors received only one citation in 2007, while one tenth of all authors received four citations or more. It is worth noting that one extreme observation received 37 citations (Jeffrey G. Williamson).[13] As can be seen from the figure, the majority of observations are concentrated in the bottom part of the distribution, a phenomenon that deserves attention when correctly specifying the econometric model.

[Figure 1 about here]

A statistical description of the dataset is reported in Table 1. The table is divided between the basic sample including bibliometric information for 450 authors, and the rich sample containing additional individual characteristics for 325 authors. The average number of citations is 1.95 in the basic sample and 2.18 in the rich sample (see the variable *Cites*). Therefore, every author in the samples receives, on average, about two citations. The median value in both cases is equal to one. The distribution of citations in either sample is thus strongly skewed. On average, only about 13% of all citations received come from the authors themselves (*Self-cite share*). Interestingly, the bibliometric variables in the basic and the rich samples do not show large differences, which suggests that the two samples might be considered as belonging to the same population and that there is no immediately evident selection of scholars into the rich sample.

The share of citations addressed to articles included in the *Journal Citation Reports* (JCR) – and thereby listed in the Social Science Citation Index (SSCI) – seems to dominate the whole set of sample citations, since more than two thirds of total citations received by an author, on average, refer to this category (*SSCI-share*). Such a large fraction of citations to JCR articles might have some implications for its estimated impact, as will be clarified later.

[13] Due to its outlier status, this observation is controlled for by means of a dummy variable in the empirical analysis.

[Table 1 about here]

Co-authorship does not appear to be that prevalent among economic history journal publications. Although half of the cited authors have at least one co-authored article, with the average number of authors per article in the basic sample being 1.56, about three quarters of all the articles in our database were single-authored (*Authors*). There does not seem to be any apparent differences across departmental affiliation, i.e. whether the authors come from economics, economic history, or history departments. By comparison with (other) economist researchers, this suggests that co-authorship is relatively uncommon among those who publish their work in economic history journals (Johnson, 1997; Coupé, 2004).[14]

The average length of articles in both samples is 25 pages, with a standard deviation of 8 pages (*Length*). This is considerably longer than the average article published in economics journals: about 15 pages (Laband and Piette, 1994; Johnson, 1997); but it is shorter than the average article in the *American Economic Review*, which is about 30 pages long (Laband, Tollison and Karahan, 2002). The fact that economic history papers are relatively long may be related to the specificity of economic history research, which usually requires large narrative and descriptive sections for each investigation. In addition, economic history papers make ample use of data appendices which are fully included in our length measure.

The rich sample also offers information concerning authors' geographical location (*Anglo-Saxon country*, etc.), the type of department to which they are affiliated (*Economics*, *History*, or *Economic History*), and their academic title (*Professor* or *Associate professor*). Of the authors considered, 40% work in the US, 13% in the UK, 10% in Spain and 8% in Canada. Almost half of the analyzed economic historians were thus affiliated to North American universities and another third in European countries. In spite of the field's recent globalization trend, only 7% of authors come from the non-Western world.[15] Full professors dominate the sample, representing about two thirds in 2007 (the share of associate professors is equal to

[14] For example, Coupé (2004) shows that after 1995 about 45% of economics articles (cited and un-cited) were co-authored, whereas in our sample of cited articles published in 1995 or later only a third was co-authored.

[15] In our sample, Australia has ten authors (3%), Israel and India four authors each (2.4%), Japan three (1%), while Mexico and Turkey have one each.

17%, while the remaining 16% comprises other positions like assistant professors, PhD students, etc.).

Regarding departmental affiliation, 58% of the cited authors were employed at economics departments. Indeed, that figure reaches 70% for universities located in Anglo-Saxon countries. Just 25% of all authors were appointed at either history (13%) or economic history (12%) departments. The remainder were affiliated to other kinds of institutions. Figure 2 plots the frequency distribution of citations per author controlling for departmental type. The figure demonstrates clearly the dominance of authors coming from economics departments. In fact, our analysis shows that the distribution of citations received by authors appointed at economics departments statistically dominates that of economic history departments, which again statistically dominates the distribution of those employed by history departments. This suggests that authors employed in economics departments are among the most influential economic historians. Strikingly, in her mid-1990s article "The End of Economic History", Christina Romer predicted a shift of the US field of economic history from a distinct academic discipline to a sub-field of economics (Romer, 1994). Our data analysis seems to offer statistical support for this conjecture.

[Figure 2 about here]

As for gender considerations, our sample reveals that economic history is an academic discipline still dominated by male authors. Indeed, the share of female authors is equal to only 13% (*Female*).

2 Econometric analysis

2.1 Specification

In this section, we aim to link the citation success of authors publishing in economic history journals to a number of article-specific and author-specific factors. Specifically, our dependent variable is the total number of citations (*Cites*) – a count variable which takes integer values from one and up. We explain the number of cites by a set of bibliometric variables (self-citation, article length, etc.), as well as a set of author background characteristics (sex, academic title, academic affiliation, etc.).

It is important to note that the citation rates are highly skewed towards the right of the distribution, as seen in Figures 1 and 2. A skewed distribution of the dependent variable typically implies that the residuals are not normally distributed when using least squares regressions. This, in turn, means that the coefficient estimates are typically inconsistent.[16] Our baseline estimations will therefore rely on a Poisson model. Indeed, the Poisson model is designed specifically to treat count variable data.

More accurately, we specify a model that describes the number of citations of articles authored by a researcher i, $Cites_i$, as a function of a vector of bibliometric variables, x_i, and a vector of academic background variables, z_i. This can be expressed as follows:

$$Cites_i = \exp(x_i'\beta + z_i'\delta + \varepsilon_i)\,. \tag{1}$$

After log-linearization, the model reads:

$$\ln Cites_i = x_i'\beta + z_i'\delta + \varepsilon_i\,. \tag{2}$$

In addition to the baseline Poisson estimation, we also run a negative binomial model in order to account for eventual over-dispersion of the dependent variable. Effectively, the negative binomial regression is a generalized version of the Poisson regression, which allows for a more flexible dispersion of the dependent variable. Yet, we prefer the Poisson model due to its salient properties of robustness. That is, it provides consistent and asymptotically normal estimators, even if the Poisson distribution is not valid (Wooldridge, 2002). In addition to this, we have also estimated the model using a wide array of different specifications without encountering any significant deviations from our main results.[17]

[16] Because our count data take on low and discrete numbers, they clearly violate the assumption that residuals are normally distributed and homoscedastic, which is required for linear regressions to work properly.

[17] For example, we have estimated various least squares models with different kinds of standard error adjustments, as well as a zero-truncated Poisson model takes into account that our dependent variable never takes the value zero (as we analyze citations conditional on being cited).

2.2 Main results

Table 2 reports the first main set of regression results. The point estimates associated with each explanatory variable are expressed as *incidence rate ratios*. These tell us how much more likely the author is to obtain an additional citation as the explanatory variables increase by one unit. It is also noteworthy that the results are entirely robust to the choice of statistical model. The Poisson and Negative Binomial (results column 4) models produce essentially identical estimates.

The first column's estimates are based on the basic sample where bibliometric information on all 450 cited is used. We find that both the length of an article and the number of authors have incidence rate ratios above one, meaning that longer articles and articles written by more than one author are cited more frequently. However, as demonstrated by the squared versions of those two variables, the positive effect gradually falls. In both cases, therefore, the relationship is non-linear, and thus the positive impact of article length and number of co-authors only holds true up to a point. These findings are consistent with earlier findings, such as Robert Whaples' analysis of articles published in the *Journal of Economic History* (Whaples, 2002) as well as studies made in the entire field of economics (Coupé, 2004).

[Table 2 about here]

The natural follow-up question is thus: what is the "optimal" length of an article, as well as the "optimal" number of co-authors needed to maximize the citation rate? We can easily answer this question by calculating the marginal effects from the coefficient estimates. The result is presented in Figure 3.[18] Using our preferred model, i.e. estimates of the Poisson regression, the optimal length of an article is 34 pages. This is rather long, above all when considering that the mean length of articles in the sample is 25 pages. Since the standard deviation of the sample is 8 pages, however, the citation-rate maximizing 34 pages are almost within one standard deviation away from the mean.

Similarly, the optimal (integer) number of authors per article is two. The gain from moving from one to two (co-)authors is large. Yet, the citation impact decreases

[18] In practice, the marginal effect is the derivative of the dependent variable with respect to the explanatory variable holding all other explanatory variables constant. In the case of dummy regressors this entails going from 0 to 1.

substantially when going from three to four authors. The question of whether more authors is beneficial in terms of the scientific impact has been dealt with in other disciplines (Coupé, 2004), and it is fair to say that, as yet, no consensus has been reached. Popular explanations point to the higher quality as stemming both from more expert input into the article and from more discussion taking place among the co-authors conducting the work. Co-authorship also substantially increases the opportunities for presenting the work at seminars and conferences (two people, as opposed to one, having twice the possibility of attending conferences, not least when taking limited individual travel funding into account). This expands the diffusion of the work, which role in citation success is addressed further below.

[Figure 3 about here]

The impact of publishing in well-established and, arguably, high-quality economic history journals, measured on the basis of their inclusion in the SSCI, also seems to be significantly positive. However, as we will show below, this effect is not robust to the analysis of the more information-rich sample, possibly due to the fact that high-quality authors choose to submit to those journals whose citations are recorded.[19] Finally, self-citations are positively correlated with the citation rate. These are only included for control purposes as our aim is to assess a scholar's impact on the field as a whole – which self-citations do not necessarily reflect.

We now extend the analysis of background variables beyond the bibliometric factors to also include author-specific personal and academic determinants. As mentioned earlier, this reduces the number of observations, for which data are available, to 325 authors. Reassuringly, however, the coefficient estimates of the bibliometric variables discussed below are almost identical to those reported above.

In columns 2, 3, and 4 of Table 2, the results reported show that economic historians employed in Anglo-Saxon countries (and, to a somewhat lesser extent, in German-speaking countries) are markedly more likely to be cited. By comparison to scholars working in the Nordic countries, Anglo-Saxon and German economic historians are between 50 and 100 percent more likely to be cited – as indicated by the

[19] As we already mentioned, this result can be also explained by the fact that some highly-cited economic history journals, like the *European Economic History Review*, were not included in the JCR during the year (2007) which we considered for the citation count.

incidence rate ratios of between approximately 1.5 (for Germans) and approximately 2 (for Anglo-Saxons). Working in Latin regions has no significant impact on the citation rate, although by formally testing for differences across regions, reported in Table 3, we find that only Nordic authors appear to be truly dominated in this respect.[20]

The role of academic titles is also important. Indeed, we find that the likelihood of being cited improves considerably when the author is a full professor.[21] The effect is substantial: in the preferred Poisson specification, full professors are 74% more likely to receive a citation than assistant professors and post-doctoral researchers (who together comprise the reference group). Similar positive effects of academic tenure on citations in economics have been noted by, e.g., Bodenhorn (2003) and Ursprung and Zimmer (2007). But why do full professors obtain more citations? Is it because of prejudice, i.e., the fact that famous 'names' are cited more frequently simply because they are famous, or is it because they write better papers? There is a vast literature dealing with this issue in a number of academic fields. Although both interpretations seem to prevail, the prejudice interpretation – that famous scholars are cited just for being famous, known as "The Matthew effect" (Merton, 1968) – has understandingly attracted the most attention.[22]

In our sample we cannot fully distinguish between the two hypotheses, but some headway can indeed be made. By interacting professor status and top-university affiliation, we may pick up some of the prejudice effect working through those wanting to cite authors at prestigious universities rather than good papers. This interaction effect, however, turns out to be small and insignificant. For the subset of the authors whose personal websites we were able to locate, we also know the place and year of their Ph.D. A long period since the Ph.D. ought to bring with it some degree of fame, over and above the actual skill-enhancing tenure effect, and hence potentially capture some prejudice influence. A similar relatively important prestige

[20] The low citation rate of Nordic scholars may be a result of the long-standing traditions in these countries to predominantly write economic history in the native language, in monograph format, and without almost any quantitative methods or economic-theoretical reasoning (see further Waldenström, 2005, on the case of Sweden).

[21] Note that authors whose articles were cited in 2007 were already appointed by that time, meaning that there is no issue of reverse causality.

[22] The term "Matthew effect" stems from the biblical passage in the Gospel of Matthew (25:29): "For unto every one that hath shall be given, and he shall have abundance: but from him that hath not shall be taken away even that which he hath".

effect on citations could come through having a degree from a top university, particularly in the case of scholars who have not ended up as professors at the top universities. However, none of these variables – neither their main effects, nor when interacted with the others – manage to remove the positive and statistically significant impact of professors being about 70% more likely to be cited than other academics.[23]

Turning to the role of departmental affiliation, we find that authors from economics and history departments are outperforming authors belonging to economic history departments. According to the incidence rate ratios in Table 2, authors at economics departments receive 30% more citations, and scholars at history departments twice as many citations, than individuals at economic history departments. The post-estimation tests in Table 3 show that these differences are significantly different from zero, but that the difference between economics and history departments is insignificant. It should be noted that the regression effects are estimated on the margin, and that there is a vast dominance of economists among the authors in our sample (as shown by Figure 2). In particular, the large number of economists who receive only one citation results in a relatively lower overall impact of belonging to an economics department. By contrast, among the relatively few authors coming from history departments (38 scholars, or roughly 10% of the sample), most (32 scholars) are full professors; the average impact of their department affiliation is hence more positive. In addition, Table 3 would suggest that the equality of the estimated coefficients cannot be rejected.

The findings in Table 2 also seem to imply that female authors generate fewer citations than their male counterparts. Given the relatively small number of female authors in the sample (41 out of 325), especially in the history (6 out 44) and economic history (4 out of 38) departments, the role of gender should be interpreted with some caution. Nonetheless, this outcome is in line with previous results showing that female researchers attract significantly fewer citations than their male counterparts (Ferber, 1988). We do not have any obvious explanation as to why this is the case. However, it may have something to do with topic-related issues, whereby women tend to choose topics that are less debated among economic historians (such as the role of gender).

[23] We have suppressed these additional regressions to save space, but they are available upon request.

But what about reputation? For example, do authors appointed at highly ranked universities receive more citations? The simple answer, based on our sample, is no. Authors who come from the top-50 universities in the world according to the worldwide ranking published in the *Times Higher Education Supplement* do not receive a significantly higher number of citations than authors working at less prestigious institutions. In fact, those authors appointed at universities ranked between top-10 and top-50 perform slightly worse than their colleagues from even lower ranked universities. This contrasts with the findings of Whaples (2002) who, in his examination of the most cited articles in the *Journal of Economic History*, discovers a positive effect of being affiliated to a top university. Our results are robust when controlling for type of department. A potential explanation for this striking result may be that a general, overall ranking of universities correlates poorly to the ranking of universities in which their respective economic history amenities had been given preference.

A potential concern with all bibliometric author-level analyses of this kind is that there may be co-authors amongst the different observations. Whenever this is the case, observations are not fully independent and that may affect the estimation and interpretation of the different citation determinants. In order to address this problem, we construct a variable based on the average co-author citation rate (see the data section above for a description), which is intended to account for the potential impact of co-author skills on the citations earned by the observed authors. Columns 3 and 4 of Table 2 include this co-author impact variable, and the results suggest that highly cited co-authors do indeed raise the citation success of the authors themselves. That is, for each additional co-author citation, an author receives on average a 5% higher citation rate. This provides compelling evidence of a spillover mechanism in co-authoring, which we examine in more detail in the following section. More importantly, however, controlling for co-authorship dependence has no apparent effect on the other results with respect to personal determinants of citation success. This becomes clear by comparing the estimates across (e.g.) columns 2 and 3 in Table 2.

Altogether, the econometric analysis of economic history journal citations points to a number of characteristics which appear to be robustly associated with citation success. Economic historians writing relative long papers, often with other authors, seem to build up enough quality in their work to attract the attention of other

scholars in the field. Similarly, male, full professors working in Anglo-Saxon or German countries – though not necessarily at top-rated universities – achieve a higher impact of their work. But what is the message to those who wish to improve their scientific impact? While sex and professorship status, for most, are not exactly choice variables, putting greater effort into each paper project and teaming up with other authors does seems to be worthwhile. The same holds true for those working in purely economics or history departments, and is potentially due to gains generated from being part of large academic communities – perhaps economic history departments are too self-contained to exercise sufficient impact

So far, our analysis has dealt exclusively with citation patterns in economic history journals. But as we discussed above, in some countries (especially the US) economic history is primarily a sub-field of economics. It would be interesting, therefore, to investigate whether the determinants of citation success of economic historians in *economic history* journals also apply to that of publishing in *economics* journals. The final two columns of Table 2 illustrate this. Here, we use the supplementary citation data containing citations of the same sample of economic historians as analyzed above, but this time we count citations made in the major economics journals. As the table shows, the results are qualitatively similar to those of our main analysis above. The bibliometric features just have about the same bearing on citation success in both fields, but the reward in terms of citations of having a large share of publications in the SSCI journals is markedly higher in the economics field than in economic history. This indicates that economists primarily read articles published in any of the leading economic history journals. Furthermore, joint work, however, is unambiguously more important for making an impact among economists than among economic historians, as illustrated by the large and significant coefficients of co-author citations in economics journals. As for academic characteristics, full professors and scholars appointed in Anglo-Saxon, German and the Nordic countries perform relatively well in economics journals. It is perhaps surprising, however, that economic historians appointed at economics departments are not cited more often in economics journals than their colleagues appointed in history or economic history departments, as demonstrated by the small and insignificant coefficient estimates for the department dummies.

[Table 3 about here]

2.3 The role of diffusion of academic work

In addition to the channels discussed above there is yet another avenue through which scientific impact may be substantially increased: an active diffusion of findings to other researchers. Arguably, one of the most straightforward ways to increase one's scientific impact is to present one's research to others. This dissemination can take a variety of forms, ranging from participation in conferences, workshops and research seminars to internet-based venues for working papers and academic blogs (Colander, 2008; Frey, Eichenberger and Frey, 2009). To the extent that such self-promotion reaches the designated audience, it is quite likely to have a positive effect on subsequent citations. However, there is almost no previous empirical work on the role of diffusion for citation success. In a study of the premature deaths of some prominent economics scholars, Aizenman and Kletzer (2011) examined whether this event in any way influenced the citations to these scholars *post mortem*, but they found no clear evidence on such effects. By contrast, Azoulay, Zivin and Wang (2010) find that the unexpected deaths of highly productive academics significantly lowered the future productivity of their colleagues.

The current study makes a more explicit inquiry into whether diffusion drives citations. As already discussed, research diffusion may take place in different ways, and we focus on three main channels of diffusion: i) *presentations* at research seminars, workshops, conferences, etc.; ii) *personal contact* with other researchers whose advice was appreciated by the author; iii) *internet publication of working papers*. Information about these three diffusion proxies were collected for the most and least cited articles in our database, 34 articles in total. Specifically, from these top-2.5 percentile and bottom-2.5 percentile groups in the citation distribution we collect detailed information about the number and names of individuals acknowledged for their comments and suggestions, and the number of seminars, workshops and conferences at which the paper was presented.[24] We also record whether the authors of cited articles were registered, and have published their working papers, at the large and internationally renowned internet website for the dissemination of research in economics: IDEAS (http://ideas.repec.org/). In order to assess the external validity of

[24] This sample contains 34 articles (5% of the 671 cited articles in our database). In practice, the top group comprises articles with three or more citations. The bottom group was selected at random (using a uniform number generator) from the large pool of articles with one citation.

the internet diffusion channel, we collect IDEAS-registration for authors in the rich author sample. However, we only include authors whose articles were published during 2002–2007 since internet usage and access in earlier years was more restricted, thus limiting the possibility of citation success through this channel.

In Figure 4, we provide scatter plots of article citations against the number of acknowledged individuals and the number of seminar and conference presentations. At face value, the data suggest a positive association in both cases: the correlation coefficients are 0.73 for acknowledgement of individuals, and 0.50 for acknowledgement of presentations.

[Figure 4 about here]

We also run Poisson regressions in order to see whether the relationship between citations and diffusion is statistically robust. These are presented in Table 4. Indeed, in bivariate models where we regress citation success solely on a measure of diffusion, a constant, and a random error term, the relationship remains significantly positive. Specifically, for each additional seminar presentation the likelihood of obtaining an additional citation increases by 14%. For an additional person thanked for their helpful comments and suggestions, the effect is somewhat smaller – just 5% – yet statistically significant. The largest impact, however, comes from disseminating online versions of working papers. Indeed, being registered at IDEAS is associated with a 79% higher chance of being cited. It should be noted that the impact of internet publication is large and significant in both our limited article sample (most and least cited articles) and the much larger author sample.

Other factors may, however, be responsible for the positive impact of diffusion. For example, full professors – by far the most cited group in the profession – often have larger networks; they tend to receive more invitations to seminars etc; and may receive more comments from their peers. This means that a positive diffusion effect could be entirely driven by skilled professors, whose citation success is due to their documented research performance (which is probably also why they were made professors in the first place). Thus, it is not the fact that they happen to present their work more frequently that drives their high scientific impact. In order to disentangle effects, we include a dummy variable equal to one if any of the authors are a professor. As shown in the multivariate equations in Table 4, this does not

influence the citation impact of diffusion. Likewise, when we introduce controls for any of the authors belonging to a top university – this could also capture both citation-generating quality aspects and more extensive diffusion possibilities (simply having well-known colleagues in your faculty may make you more appealing for those organising seminars) – then nothing happens to the diffusion effect. Even when interacting top-university status with diffusion, the results remain the same. The main citation effect of diffusion, therefore, is still positive and significant.

[Table 4 about here]

We complete the investigation of the diffusion effects for citations by going one step further with our data. The purpose is to check whether people thanked in the acknowledgements – people we *know* are familiar with the work – are also the ones citing it. We find that out of a total of 76 citations from the 17 most cited articles, eight citations, or 10%, came from persons acknowledged in the articles. Therefore, the vast majority of the citations are not "mechanically" linked to the acknowledgements, which suggests that acknowledgements operate merely as a proxy of diffusion. Nevertheless, the fact that a non-negligible flow of citations come from those familiar with the studies confirms that diffusion works – a connection not previously demonstrated in literature.

3 Concluding remarks

This study offers a modest attempt to identify some of the factors that determine the citation success of authors who have recently published their work in economic history journals. Similar studies have been produced for other disciplines, especially economics, but with no explicit treatment of economic history as a self-contained field. Arguably, a sub-discipline approach is useful for truly understanding the determinants of the citation success of economic historians.

Several important findings have emerged from the analysis. As for the purely bibliometric attributes, we find that longer papers receive more citations, but only up to a certain point. The same is true for the number of authors involved. The "optimal" number of authors for a paper is two, while the "optimal" length of a paper is 34 pages. Authors appointed at universities in Anglo-Saxon countries are more likely to

have their papers cited than authors employed in Latin, Nordic, or German-speaking countries. Academic titles matter: being a full professor significantly increases the citation frequency (when compared to assistant professors and post-docs). Furthermore, authors from economics or history departments are cited more often than their colleagues at economic history departments. Gender also seems to be a factor: women, especially in economics departments, are cited less than men.

Last but not least, our study is one of the first to empirically estimate the role of research diffusion for subsequent citation success. Using a number of different measures of diffusion, and controlling for several competing hypotheses, we find a robust link between diffusion and citations. Indeed, the returns of research diffusion are quite substantial: each academic presentation (conference, workshop or seminar) increases the chances of being cited by up to 14%, and making your working papers accessible on internet websites improves citation success by up to 70%.

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Figure 1: Number of authors for each citation count

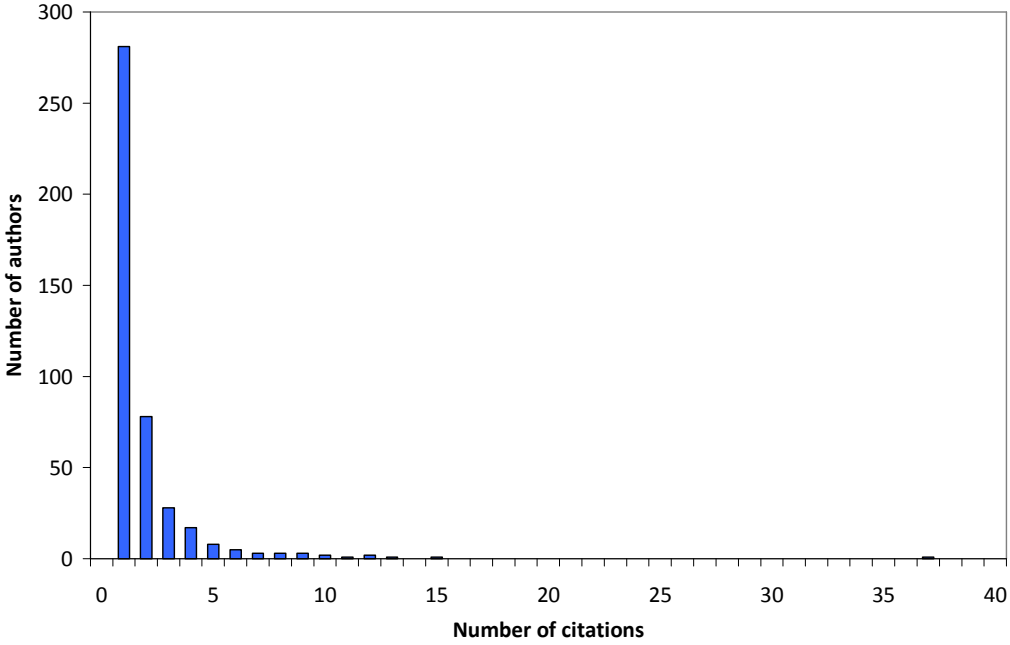


Figure 2: Distribution of citations across authors and departments.

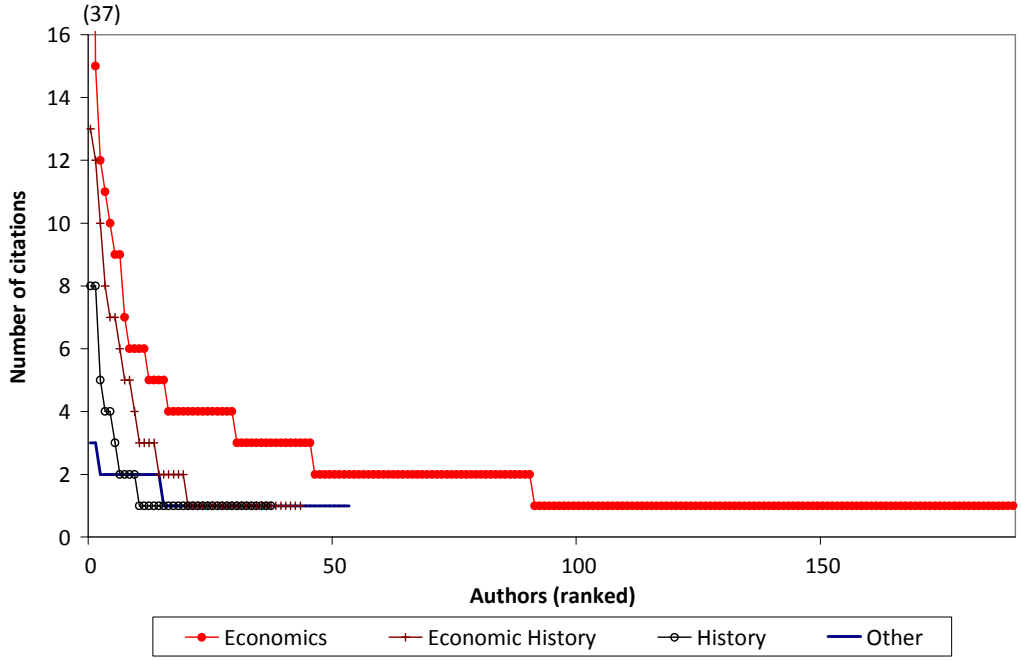
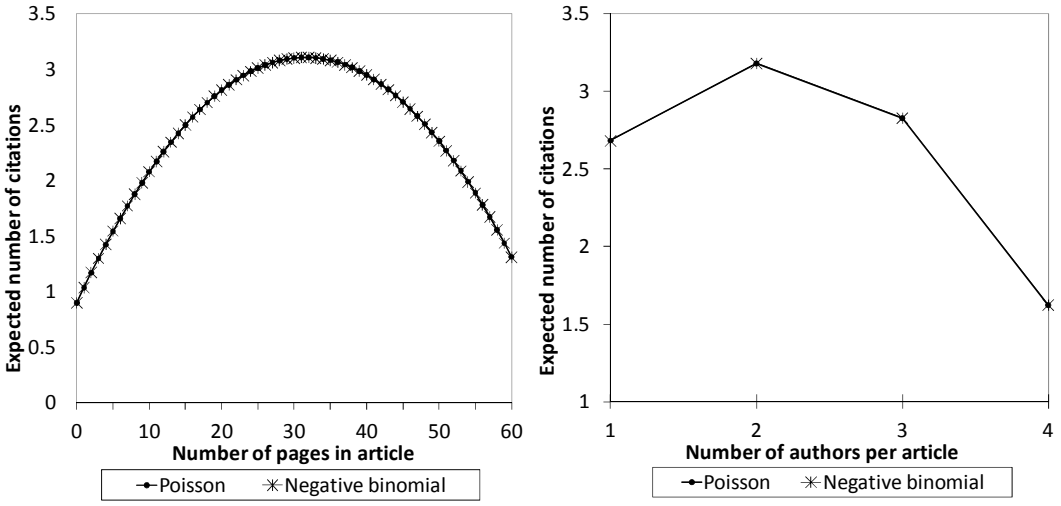
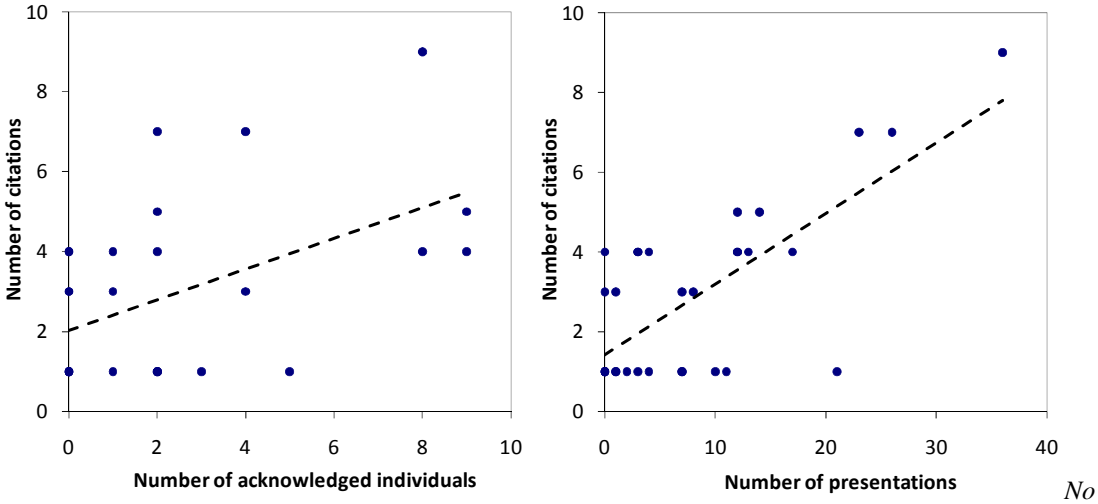


Figure 3: "Optimal" article length and number of authors for citation success.



Note: Calculations are based on estimates in Table 3, i.e., using the marginal effects conditional on all the other controls.

Figure 4: Diffusion and citation success.



Note: The population in both graphs consists of 34 authors, constituting the top 17 and the bottom 17 (a random selection of all having one citation) in terms of citations of the basic sample population.

Table 1: Summary statistics

Variable	Description	Mean	S.D.	Min	Md	Max
	Basic sample (450 observations)					
Cites	Total number of citations	1.95	2.51	1	1	37
Selfcite-share	Share of self-citations	0.13	0.30	0	0	1
SSCI-share	Share of SSCI-journal citations	0.69	0.44	0	1	1
Length	Number of pages in articles	24.45	8.36	2	24	50
Authors	Number of authors	1.56	0.69	1	1.12	4
	Rich sample (325 observations)					
Cites	Total number of citations	2.18	2.84	1	1	37
Selfcite-share	Share of self-citations	0.16	0.33	0	0	1
SSCI-share	Share of SSCI-journal citations	0.68	0.45	0	1	1
Length	Number of pages in articles	25.55	8.09	5	25	50
Authors	Number of authors	1.67	0.73	1	2	4
Female	Female author	0.13	0.33	0	0	1
Anglo-Saxon country	From Anglo-Saxon country	0.66	0.48	0	1	1
Latin country	From Latin European country	0.17	0.38	0	0	1
German country	From Germanic country	0.08	0.27	0	0	1
Nordic country	From Nordic country	0.05	0.21	0	0	1
Professor	Full professor	0.67	0.47	0	1	1
Associate professor	Associate professor	0.17	0.37	0	0	1
Top University	Top 50 university in THES[a]	0.13	0.34	0	0	1
Economics	Economics dept. affiliation	0.58	0.49	0	1	1
History	History dept. affiliation	0.12	0.32	0	0	1
Economic history	Economic history dept. affiliation	0.14	0.34	0	0	1
Econcites	Economics journal citations	0.37	0.87	0	0	6
Coauthorcites_echist	Co-authors' citations, econ hist journals	2.80	5.00	0	1	37
Coauthorcites_econ	Co-authors' citations in econ journals	0.33	0.78	0	0	5

Note: SSCI-journals are journals listed in Thomson Reuter's *Journal Citation Reports*. Country groups are defined as follows. Anglo-Saxon: Australia, Canada, Ireland, New Zealand, United Kingdom, United States; Latin: France, Italy, Portugal, Spain; German: Austria, Belgium, Germany, Netherlands, Switzerland; Nordic: Denmark, Finland, Norway, Sweden.

[a] THES = *Sunday Times*' Higher Educational Supplement, December 2007.

Table 2: Determinants of citation success

	Economic history journal citations				Economics journal citations	
	Poisson	Poisson	Poisson	Negative binomial	Poisson	Poisson
	(1)	(2)	(3)	(4)	(5)	(6)
Selfcite-share	1.31**	1.33**	1.36**	1.35**	1.52***	1.23
	(0.15)	(0.19)	(0.19)	(0.19)	(0.24)	(0.24)
Length	1.08***	1.08***	1.09***	1.08***	1.37***	1.31***
	(0.02)	(0.02)	(0.03)	(0.03)	(0.15)	(0.12)
Length squared	1.00***	1.00***	1.00***	1.00**	1.00**	1.00**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Authors	3.82***	3.16***	1.65	1.62	5.56	0.30
	(1.22)	(1.11)	(0.56)	(0.52)	(6.10)	(0.28)
Authors squared	0.71***	0.74***	0.84**	0.85**	0.61*	1.22
	(0.06)	(0.06)	(0.07)	(0.06)	(0.17)	(0.28)
SSCI–share	1.17*	0.96	1.05	1.06	4.47***	3.56***
	(0.10)	(0.12)	(0.12)	(0.12)	(1.77)	(1.35)
Co-author cites			1.04***	1.05***		1.91***
			(0.01)	(0.01)		(0.17)
Female		0.83	0.84	0.85	0.98	1.24
		(0.10)	(0.10)	(0.09)	(0.36)	(0.39)
Anglo-Saxon country		1.74***	1.51***	1.47***	5.34*	3.48
		(0.24)	(0.20)	(0.19)	(5.39)	(3.60)
Latin country		1.34	1.43*	1.40*	4.99	3.85
		(0.31)	(0.31)	(0.28)	(5.11)	(3.99)
German country		1.60**	1.62**	1.60**	6.69*	5.82*
		(0.31)	(0.30)	(0.29)	(7.04)	(6.22)
Nordic country		1.02	1.07	1.07	7.28*	5.79
		(0.18)	(0.18)	(0.17)	(8.30)	(6.58)
Professor		1.65***	1.53***	1.51***	1.93*	2.09*
		(0.16)	(0.15)	(0.14)	(0.74)	(0.79)
Associate professor		1.08	1.10	1.10	0.97	0.62
		(0.12)	(0.12)	(0.12)	(0.51)	(0.34)
Top University		0.88	0.91	0.92	0.79	0.50
		(0.13)	(0.14)	(0.13)	(0.40)	(0.21)
Economics dept.		1.28**	1.18*	1.17*	0.79	0.87
		(0.13)	(0.11)	(0.10)	(0.26)	(0.25)
History dept.		1.98***	1.67***	1.63***	1.01	0.80
		(0.32)	(0.26)	(0.25)	(0.48)	(0.26)
Econ. history dept.		1.08	1.03	1.02	0.49	0.60
		(0.19)	(0.17)	(0.16)	(0.27)	(0.34)
Constant	0.18***	0.08***	0.16***	0.17***	0.00***	0.00***
	(0.06)	(0.04)	(0.07)	(0.07)	(0.00)	(0.00)
Observations	450	325	325	325	325	325
Pseudo-R^2	0.125	0.188	0.221	0.140	0.184	0.282
Alpha				0.09***		

Note: Dependent variable in the first four columns is citations in economic history journals (*Cites*) and, in the last two columns, citations in economics journals (*Econcites*). Note that *Co-author cites* refers to citations in economic history journals in equations 1-4 and economics journals in equations 5-6. Coefficients are presented as incidence rate ratios. All models include an outlier dummy. Robust standard errors are in parentheses. Alpha denotes p-value from a likelihood ratio test of no difference between the Poisson and Negative Binomial models. ***, **, * denote statistical significance at the 1%-, 5%- and 10%-level, respectively.

Table 3: Testing equality of estimated coefficients in rich sample

Test	χ^2-statistic	Prob.>χ^2
Departments		
Economics = Economic history	6.18**	0.01
Economics = History	0.96	0.33
History = Economic history	7.76***	0.01
Country/language region		
Anglo-Saxon = Latin	0.24	0.62
Anglo-Saxon = German	1.60	0.21
Anglo-Saxon = Nordic	12.11***	0.00
German = Latin	0.62	0.43
German = Nordic	5.98**	0.01
Latin = Nordic	1.99	0.16
Academic title		
Professor = Associate professor	14.09***	0.00

Note: Tests are based on Poisson regressions for the rich sample in Table 2, column 2.

Table 4: Diffusion of research and citation success

	Diffusion channel:							
	Seminar presentations		People acknowledged		Internet Publication		Internet publication (*author sample*)	
Diffusion effect	1.12***	1.14***	1.05***	1.05***	1.79**	1.77*	1.82***	1.54***
	(0.03)	(0.04)	(0.01)	(0.01)	(0.43)	(0.55)	(0.34)	(0.22)
Length		1.07		1.06		1.05		1.05
		(0.05)		(0.04)		(0.04)		(0.04)
Length squared		1.00		1.00		1.00		1.00
		(0.00)		(0.00)		(0.00)		(0.00)
Authors		1.92		2.28		1.25		2.86*
		(1.85)		(2.35)		(1.31)		(1.74)
Authors squared		0.84		0.79		0.88		0.73**
		(0.21)		(0.23)		(0.25)		(0.11)
Years since publ.		0.97		0.95**		1.01		
		(0.02)		(0.02)		(0.03)		
Any professor		1.51**		0.99		0.92		2.09***
		(0.29)		(0.41)		(0.44)		(0.33)
Top University		2.03***		1.71**		2.00**		0.98
		(0.45)		(0.36)		(0.55)		(0.38)
Diffusion × Top U.		0.89**		0.98		0.54		0.85
		(0.04)		(0.01)		(0.20)		(0.40)
Constant	2.11***	0.24	1.73***	0.42	1.91***	0.62	2.15***	0.15***
	(0.30)	(0.25)	(0.23)	(0.36)	(0.38)	(0.56)	(0.22)	(0.09)
Observations	34	34	34	34	28	28	160	144
Pseudo-R^2	0.09	0.19	0.17	0.22	0.05	0.13	0.05	0.29

Note: Dependent variable is the total number of citations (*Cites*). For definitions of explanatory variables, see Table 1 and main text. Poisson estimation is used and coefficients are presented as incidence rate ratios. First three columns use article sample while the fourth column uses the rich author sample requiring that papers were published between 2002 and 2007. Robust standard errors are in parentheses. *** and ** denote statistical significance at the 1%- and 5%-level.