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What 5,000 Acknowledgements Tell Us About Informal Collaboration in Financial Economics *

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Formal collaboration between researchers via co-authorship has been shown to have a positive impact on academic productivity. But most academic collaboration is informal, e.g. in the form of commentary on research papers. We present and discuss a novel dataset on informal collaboration in Financial Economics obtained from the acknowledgement sections of over 5,000 published research papers. We construct the social network of informal collaboration connecting authors and commenters and show that a researcher's position in this network is predictive of her future productivity and the scholarly impact of the papers she comments on. We study the characteristics of the network using various measures from network theory and characterize what determines a researcher's position in it.

Keywords: financial economics, intellectual collaboration, social networks, acknowledgements

JEL Classification: A14, D83, G00, O33

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1 Introduction

Collaboration is prevalent in academic research and research conducted collaboration is regularly more influential than single-authored work (Beaver and Rosen, 1978; Wuchty et al., 2007). However, co-authorship, as a formal way of collaboration, is but one form of collaboration among academics. Laband and Tollison (2000) highlight that social ties through informal intellectual collaboration—commenting on a paper or discussing it at a conference or seminar—are commonplace in academic research in Economics.[1] Access to productive and helpful informal collaboration also matters for researcher's career (Oettl, 2012*b*). But although researchers engage in informal collaboration on a daily basis, little is known on its impact, be it positive or negative, on science. One reason may lie that in the difficulty to observe informal collaboration in most settings. In this paper we discuss a novel, newly publicly available, dataset derived from published papers in Financial Economics where it is customary to acknowledge presentations in seminars and conferences as well as individuals who provided valuable input. It allows scholars interested in economics of science to ask many new questions, some of which we explore here.

The dataset is also suitable for network scholars and examinations of social capital. Collaboration leads to the emergence of social networks among researchers. A researcher's position in these networks is consequential for the author's productivity (Azoulay et al., 2010; Ductor et al., 2014). Whether there is a similar effect of an author's position in the network of informal intellectual collaboration is unknown. But as Colander (1989, p. 146) concludes, *"[i]n studying the Economics Profession, one quickly learns the importance of informal networks, contacts and the exchange of ideas. Much if not most of the debate and discussion about economic ideas take place at the pre-working paper, workshop and working paper stages."* One of the many hypotheses we discuss is thus that centrality in the network of informal collaboration contains information over and above centrality in the co-author network.

Our dataset covers interactions of 14,528 researchers observed from 5,631 acknowledgement

[1] In a joint editorial, Green et al. (2002, p. 1032) advise authors to *"circulate their papers and give seminars to colleagues to receive constructive criticism before submitting to a journal."*

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sections and 6,400 papers.[2] These acknowledgements are sourced from 6,400 full research papers published in 6 journals in the 1997-2011 period. 81% of all researchers (including all authors) are uniquely linked to the bibliometric database Scopus. The set of journals we draw from includes the "top three" Finance journals (the Journal of Finance, the Journal of Financial Economics, and the Review of Financial Studies) and a set of three journals with a lower impact factor (the Journal of Financial Intermediation, the Journal of Money, Credit, and Banking, and the Journal of Banking and Finance).[3] Our setting offers some advantages to study the causes and consequences of informal collaboration. Financial Economics is both a large and a homogeneous sub-field of Economics, and Economics is a suitable discipline because of the high relative amount of informal collaboration per se (Laband and Tollison, 2000).

We distinguish all researchers between commenters (those that are acknowledged) and authors (those that wrote the papers). Only a minority of 1,646 researchers did both, publishing and commenting in our dataset. A majority of 56% of the researchers are only commenters but not authors. This alone shows the relevance of our dataset, because their contribution (and that of authors that are also commenters) to the papers would not be observable without looking at acknowledgements. Furthermore, we observe a higher extensive and intensive margin of informal collaboration in the top journals, nurturing the hypothesis that it may be a driver of higher quality research. We also find an increase in informal collaboration over time. This trend is driven by young authors, rather than by a cultural shift. We find that reciprocity is prevalent within the bounds of our dataset. The literature so far could only show reciprocity for data sharing (Haeussler et al., 2014). However, it does not explain the large amount of informal collaboration alone.

We find positive but rather weak correlations (around 0.5) between scientific productivity measures and the number of acknowledged contributions. It seems that a prolific researcher is not necessarily a very "helpful" (Oettl, 2012*a*) researcher, and vice versa. Yet more prolific researchers tend to be acknowledged more often, as do more senior researchers, but at a decreas-

[2] The full dataset is available at https://github.com/Michael-E-Rose/CoFE.

[3] We deliberately do not use journals close in impact factor to the top 3 Finance journals, such as the Review of Finance and the Journal of Financial and Quantitative Analysis. This enables us to clearly distinguish collaboration in the top tier of journals in Finance from collaboration within three journals with a similar topical focus targeted at a specific audience.

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ing rate. Female researchers are acknowledged on 0.4 fewer papers and by 0.6 fewer authors over a three-year period than their male counterparts. This descriptive finding adds to recent debates regarding the role of females in informal collaboration (Chari and Goldsmith-Pinkham, 2017), collaboration networks (Ductor et al., 2018) and the perception of female researchers (Sarsons, 2017; Hengel, 2020). While the female malus promises to be a relevant piece in the gender gap puzzle, it warrants further research.

Connecting researchers upon informal collaboration to obtain a social network has several benefits. Network Analysis allows studying the speed of learning and the diffusion of information (Alatas et al., 2016). This is because social networks are a necessary conduit for tacit information. The network topology may also tell us about the (changing) nature of the profession, revealing for example its inclusiveness. Finally the individual researcher's position in the network might be consequential for her career and her output. For example, Ductor et al. (2014) hypothesize that closeness to more productive researchers begets early access to new ideas which in turn improves academic output. Consequently, there is a rich literature on co-author networks which expands to questions such as (i) how co-author links emerge (McDowell and Melvin, 1983; Freeman and Huang, 2015); (ii) what the individual benefits of network links are to authors (Azoulay et al., 2010; Ductor, 2015); (iii) and whether teams are more productive or influential than solo-authors (Medoff, 2003; Wuchty et al., 2007). Yet no such study is available for networks of informal collaboration. In this first empirical exercise we show that networks of informal collaboration capture dimensions distinct from co-author networks. The network of informal collaborations may be useful as explanatory variable when studying e.g. the determinants of scientific productivity. Moreover, it may serve as an interesting dependent variable in studies exploring the relationship of individual characteristics and social capital.

We take a first step and construct networks of informal collaboration linking researchers whenever one acknowledges the other. Links are weighted and directed bearing the meaning "has given advise x times". We construct 13 such networks for every year between 1999 and 2011, where each network is inferred from publications up until two years ago to account for the publication lag. We contrast these networks with common co-author networks where links between researchers indicate the number of joint publications in that period.

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The network of informal collaboration is dramatically more connected than the co-author networks. The higher connectivity and size imply a different transmission of information and a different spill-over rate. Because of their low clustering, out networks of informal collaboration however do not inhibit small-world properties.[4] However, clustering–the extend to which one's collaborators are also collaborators of each other–is increasing over time. The community is hence moving towards a small world.

Given the networks of informal collaboration, we compute various centrality measures. The centrality measures we study are degree, betweenness centrality and eigenvector centrality. These measures discriminate among researchers with respect to their access to information traversing the network, or according to their possible influence on peers (Jackson, 2014). Banerjee et al. (2013, 2014) for example show how well-connected individuals tend to be approached by others for information.

None of these centralities correlate strongly with each other, and, most importantly, they do not correlate strongly with measures of academic productivity. This underpins the fact that they capture different aspects of the academic life, and that informal collaboration is not just a proxy for easier-to-observe attributes. More senior researchers are less influential in the network (lower eigenvector centrality), while more prolific researchers are more likely to connect otherwise disparate research communities (higher betweenness centrality). Yet we find that authors who are connected to such helpful and connected researchers are more productive. The same is true for academic papers. Not claiming causality, we provide evidence for the relevance of informal collaboration and access to knowledge in the academic production function. Moreover, we find centralities in the network of informal collaboration to have higher explanatory power than centralities in the co-author networks. It is thus a question which network proxies best the "knowledge network" (Phelps et al., 2012) of Financial Economics.

We place a lot of emphasis on the validity and reliability of our data. The main concern regarding acknowledgements is that authors could use them strategically, e.g. to influence editors, referees, or readers. Authors would want to influence editors' choice of referees, or might

[4] Small-world networks have unique information diffusion properties (Watts and Strogatz, 1998; Watts, 1999). They feature high clustering and a small average distance that characterize well many real-world networks.

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want to increase referees' and readers' perception of the quality of the paper. While strategic acknowledging is discouraged and can be costly (Hamermesh, 1992), it remains the main threat to reliability measuring informal collaboration with acknowledgements data. There are a number of facts speaking against name-dropping as the sole or dominant motive: At least 50% of the papers acknowledge colleagues, coauthors researchers authors have previously collaborated with; almost all papers acknowledge researchers acknowledged by no one else (in the dataset); researchers with a high visibility (many publications or citations) are not those acknowledged most often.[5]

Our paper and data are most closely linked to the literature on informal collaboration in academia. Cronin (1995) provides a taxonomy of informal collaboration. He states that authors acknowledge individuals for various outsourced tasks. Comparing informal collaboration in Economics and Biology, Laband and Tollison (2000) find that a higher number of commenters is associated with a higher citation count. Using information about an academic's position in the social network of informal collaboration considerably extends the work of Laband and Tollison (2000) who neither study the network of informal collaboration, nor the relationship between informal collaboration and authors' productivity. Brown (2005) includes seminar presentations as another form of informal collaboration and finds that the number of acknowledged seminars is more relevant for citation count than the number of commenters.[6] Oettl (2012*b*) investigates the impact of informal collaboration on authors in Immunology. Losing helpful co-authors leads to a drop in the quality of a researcher's output by 14%.

Informal collaboration matters not only in academia, but also in other highly creative activities. The innovation literature has long acknowledged the importance of close social proximity and the spill-over of tacit knowledge (Buenstorf and Schacht, 2013; Orazbayev, 2017; Andrews, 2019). But informal collaboration does not only allow and facilitate the flow of knowledge, it also helps in the production process. Already at the idea generation-stage informal collaboration helps screening and assessing the quality of an idea (Hasan and Koning, 2019).

Adhering to its exploratory nature, this study is structured as follows. In the next section we

[5] We discuss this point in greater detail in Appendix B, along with details of the Scopus matching procedure.
[6] To strengthen the external validity of our data, we replicate main findings of both these studies in appendix C.

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explain data and variables. The following three sections examine questions and highlight stylized facts regarding three independent units of analysis: The acknowledgement section itself, bilateral informal collaboration (the link between commenter and author), and the network of informal collaboration.

2 Data and Variables

Informal Collaboration Informal collaboration becomes visible in acknowledgments which we collect from 5,631 papers. These were published between 1997 and 2011 in six Finance journals with similar focus:[7] The Journal of Finance (JF), the Journal of Financial Economics (JFE), The Review of Financial Studies (RFS), the Journal of Financial Intermediation (JFI), the Journal of Money, Credit, & Banking (JMCB), and the Journal of Banking and Finance (JBF). JF, RFS and JFE are commonly regarded as the top journals in Financial Economics. [8] The other three journals publish a similar amount of papers.

From each paper's acknowledgement section (which is often a title footnote), we collect the names and number of seminars and conferences, and, crucially, the names (or number) of the commenters that are acknowledged for concept-related acknowledgments (Cronin, 1995). From the analysis we omit research assistants, editorial support and non-academic commenters (such as industry professionals or central bankers) if they are acknowledged as such. If individuals are not thanked for a specific role, we assume they are acknowledged for concept-related help. Similar to Brown (2005) we remove the journal's managing editors of the current and the previous two years from each paper's list of commenters. This prevents a technical overestimation of their importance in the network.[9] We define a paper as having an acknowledgement if

[7] For 4,733 of the papers we know the Journal of Economic Literature (JEL) codes from either the published or a previous version. 88% of them belong to general category G (Financial Economics). Additional 8% list E (Macroeconomics and Monetary Economics), but not G.

[8] Borokhovich et al. (2000) and annual reports of The Journal of Finance refer to these journals as top journals, too.

[9] The vast majority of papers acknowledges the editor of the respective journal. If we calculate an editor's position within the social network of informal collaboration, we are likely to be biased towards more frequently publishing journals. The more paper a journal publishes, the higher is its editor's observed centrality in the uncorrected data.

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it acknowledges at least one commenter (after removing editors) or one seminar or one conference. If papers report "multiple" or "several" instances of a category (i.e. "audiences at multiple seminars") we assume that number to be 2. For all those papers we set the count of a category to 0 it is not reported. The assumption behind that is that since the paper contains an acknowledgement section, it would have reported say a conference if it was presented at one.

We then manually consolidate all 19,278 name variants in our database.[10] We are left with 14,528 distinct researchers (author or commenter).

Researcher Characteristics For each researcher and each year we define a number of researcher characteristics. We estimate gender based on her first name, if available, using the genderize.io database.[11] We obtain gender estimates for 99.67% of all researchers in our dataset (that is, 200 researchers go without estimate, many of these because we did not find a full first name).

The remaining variables are derived from records in Elsevier's bibliometric database Scopus.[12] Unlike other bibliometric databases, Scopus solves the problem of name disambiguation using unique Author profile identifiers on their side. According to our procedure, which we detail in appendix B.1, we can match all 6,406 authors and 9,056 out of 11,881 (76.26%) acknowledged commenters to their respective author profiles.[13] In total we link 11,703 or 80.57% of the 14,528 distinct researchers in the database to their Scopus Author profile.

For each matched researcher we record all publications in each year and we count all citations to these in each year. Combining both the number of citations and publications we measure prolificness using the Euclidean index of citations.[14] The computation is as follows. For each year t, count all citations to each of researcher i's q publications published until and including

[10] The Journal of Finance's longtime editor Campbell R. Harvey, for example, is being acknowledged as Cam Harvey, Campbell Harvey, Campbell R. Harvey, and Campell Harvey (with a typo). To avoid wrong aggregations based on typos, we conducted an internet search for every name to obtain the correct one.

[11] See https://genderize.io/.

[12] Using code develop by Rose and Kitchin (2019).

[13] Counting the number of comments made by commenters, we obtain a coverage of 43,945 / 47,234 ≈ 93.04%. Note that not all acknowledged commenters are represented in the Scopus database: In order to have a Scopus profile, an author must have published at least once in a journal or book that Scopus indexed. Many acknowledged commenters do not satisfy these criteria as they are not academics but industry professionals or research assistants not marked as such.

[14] Perry and Reny (2016) show that this index possesses desirable properties that other indices (such as the h-index) do not, such as depth relevance, scale invariance and directional consistency.

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t, then take the square root of the sum of the squared citation counts. That is, if $c_{k,t}$ is the total citation count for paper k until t, then the Euclid$_{i,t}$ of researcher i in year t is:

$$Euclid_{i,t} = \sqrt{\sum_{k=1}^{q_{i,t}} c_{k,t}^2} \tag{1}$$

Next we define experience as the number of years between the first publication and the year of publication of the paper (that either the author published or the commenter is acknowledged on). If the first publication is in the future, we set experience to 0. Finally we record every matched researcher's affiliation using any given year's publications.

Network Measures Using acknowledgements of papers and authorship information, we construct networks of informal collaboration and co-author networks. In the network of informal collaboration, two researchers are connected with a weighted directed link whenever one acknowledges the other on a published paper in our dataset. Even though information and spillovers occur in both directions (the commenter provides feedback to the author, and the commenter learns about yet unpublished results to build her own research on), we choose to analyze directed networks because the directionality allows tracing whom researchers acknowledge and who they are acknowledged by. We compare the network with a co-author network which connects researchers with an undirected weighted link whenever they have co-authored a paper in our dataset.

We construct thirteen networks of informal collaboration and thirteen co-author networks for all $t \in \{1999, 2001, \ldots, 2011\}$, which are all constructed in the same way.[15] The adjacency matrix G_t represents the network of informal collaboration. Its elements g_{ij} indicate the number of times j acknowledges i in $t, t-1, t-2$, accounted for the number of authors on a paper. That is, for each paper that acknowledges j on a paper with k authors, g_{ij} increases by $1/k$. Likewise the adjacency matrix H_t for the co-author network contains elements $h_{kj} = h_{jk}$ indicating the number of joint publications of j and k in $t, t-1, t-2$.

Networks can have multiple components and two researchers belong to the same component

[15] We therefore omit the time index when no confusion can arise.

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if there exists an alternating sequence of researchers and links between them. This sequence is called a path. The size of a component is the number of researchers that belong to it. The component containing the most researchers is called the giant component, if it is also large compared to the rest of the network (Jackson, 2014). Some measures are component-specific, in which case we report the measure only for the largest component. The length of the shortest path between two researchers is their distance. The diameter of a component is the maximum of all shortest paths.

In order to measure and compare networks in terms of their connectedness, we use network density and average clustering. Density measures the network's efficiency in information transmission. The higher the number, the more potential connections are realized and thus the faster the transmission. It is defined as the share of realized paths $\sum_{i,j}^{G} s_{ij}$ to the number of potential paths $\frac{m(m-1)}{2}$ between a network component with m researchers:

$$density = \sum_{i,j}^{G} s_{ij} \frac{2}{m(m-1)}. \tag{2}$$

Clustering refers to the connectedness of a researcher's collaborators: How often do a researcher's collaborators collaborate with each other? Formally, a researcher i's clustering coefficient is the share of collaborators that are collaborating with each other, over the number of possible pairs. The set of collaborators of i is the neighborhood $\mathcal{N}_i(G) = j : g_{ij} > 0$. For the directed networks of informal collaboration, clustering is defined as:

$$clustering(G)_i = \frac{|\{g_{jk} : v_j, v_k \in \mathcal{N}_i, g_{jk} \in G\}|}{\text{degree}(i)(\text{degree}(i)-1)}, \tag{3}$$

while for the undirected co-author networks it is defined as

$$clustering(H)_i = \frac{2|\{h_{jk} : v_j, v_k \in \mathcal{N}_i, h_{jk} \in H\}|}{\text{degree}(i)(\text{degree}(i)-1)}. \tag{4}$$

The average clustering normalizes the sum of all clustering coefficients by the number of net-

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work members n:

$$avg.\ clustering = \frac{1}{n} \sum_{j \in G} \text{clustering}_j \tag{5}$$

Network Centralities We compute three network centralities: Out-Degree, Eigenvector centrality, and betweenness centrality. For technical reasons, we compute all centralities (except degree) in each network's giant component only. Researchers in the other components receive a centrality of 0. This is because the computation of the centralities relies on paths and because centralities are not comparable across components. For example, if researcher i belongs to a small network component, all other researchers are fairly close. In contrast, a researcher in a large component might have a potentially much smaller centrality because many other researchers are far away.

Out-Degree is a very simple and informative measure in directed networks. It is simply the number of outgoing links from a researcher, i.e. how many authors acknowledged someone. It simply counts the number of links in undirected networks (our co-author networks). More formally out-degree is the size of the neighborhood $\mathcal{N}_i(G)$:

$$out\text{-}degree_i = \left|\mathcal{N}_i(G_i)\right|, \tag{6}$$

Researchers that are not acknowledged receive an out-degree of 0. Within the co-author networks, which are undirected, $g_{ij} = g_{ji}$, so that the measure is simply called degree. It's the number of distinct co-authors.

We are also interested in reach and influence beyond the immediate neighborhood. Since degree is limited to that neighborhood we include eigenvector centrality as well Bonacich (1987). Ballester et al. (2006), Hojman and Szeidl (2008) and Elliott and Golub (2019) among others show theoretically how an individual's eigenvector centrality is related to equilibrium outcomes in games on networks, as it is directly linked to influence and effort. For these reasons, eigenvector centrality is particularly relevant in provisions of public goods such as knowledge, because

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the effort brought forward in equilibrium corresponds to someone's eigenvector centrality. The eigenvector centrality of researcher i is the weighted sum of collaborators, where weights correspond to their eigenvector centralities, normalized by some constant λ:[16]

$$eigenvector_i = \frac{1}{\lambda} \sum_{j \in \mathcal{N}_i} \text{eigenvector}_j \tag{7}$$

Since eigenvector centrality focuses on connectivity and influence only, but remains silent about the importance of a researcher for knowledge flows, we also study betweenness centrality (Freeman, 1978). Betweenness centrality is often used to measure the individual influence on information flows within a network (Jackson, 2014). A high betweenness central researcher could hold authority over, or control collaboration between, disparate clusters in a network; or indicate they bridge between two otherwise sparsely connected clusters. Formally, it is the frequency with which a researcher is on the shortest path $\sigma(j,k)$ between any two researchers j,k:

$$betweenness_i = \sum_{j,k \in G} \frac{\sigma(j,k|i)}{\sigma(j,k)} \tag{8}$$

Finally we add an indicator for membership in the largest component the respective co-author networks.

Samples There are two main samples we use in this study, the "paper sample" and the "person sample". The paper sample compromises of 5,615 observations where each observation is a paper with an acknowledgement (at least one commenter or one seminar or one conference acknowledged).[17] Table 1 presents summary statistics and table A1 (in the appendix) the corresponding correlation coefficients. Variables in this sample include measures of academic success, paper characteristics (which include characteristics of authors), informal collaboration and centralities of both authors and commenters. If some forms of informal collaboration

[16] The intuition behind this definition is that the more important collaborators are, the more important the focal researcher is. By virtue of the Perron-Frobenius theorem, the vector of eigenvector centralities is the eigenvector of the leading eigenvalue of G when λ satisfies the following condition: $G\mathbf{b} = \lambda\mathbf{b}$, i.e. when λ is the leading eigenvalue.

[17] Note there are 5,631 papers with acknowledgements in the publication range. The missing papers, which are all published in the JMCB, unfortunately are not covered in Scopus.

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are not mentioned (i.e. no conferences acknowledged) we set its count to 0.

Table 1: Summary statistics for the person sample.

	N	Mean	Median	Std.Dev.	Min	Max
Academic success						
Total citation count	5615	119.4	54	229.43	0	5675
Top publication	5615	0.6	1	0.50	0	1
Paper Characteristics						
# of pages	5604	26.1	26	10.22	2	80
# of authors	5615	2.1	2	0.84	1	6
Auth. total Euclid	5615	187.3	61	398.04	0	8114
Informal collaboration						
# of seminars	5615	3.7	2	4.40	0	32
# of conferences	5615	1.8	1	1.98	0	23
# of commenters	5615	8.4	7	6.59	0	58
Com. total Euclid	5615	1373.5	660	1991.08	0	19455
Authors' centralities						
Auth. giant (co-author)	5615	0.09	0	0.28	0	1
Auth. eigenvector (co-author)	5615	0.0	0	0.05	0	1
Auth. betweenness (co-author)	5615	0.0	0	0.07	0	1
Auth. giant (informal)	5615	0.66	1	0.47	0	1
Auth. eigenvector (informal)	5615	0.0	0	0.04	0	1
Auth. betweenness (Informal)	5615	0.0	0	0.01	0	0
Commenters' centralities						
Com. giant (informal)	5615	0.8	1	0.43	0	1
Com. eigenvector (informal)	5615	0.1	0	0.15	0	2
Com. betweenness (informal)	5615	0.0	0	0.04	0	0

Notes: Summary statistics for paper sample, where the unit of observation is the a published research paper.

The "person sample" consists of 56,261 matched researcher-year observations and combines all researcher-related information. These include network centralities but also raw counts of informal collaboration measured in a three-year window.

Table 2 presents summary statistics for the person sample. The average observation has a Euclidean index of 100.8, has published 14 publications during 12 years of academic experience which have garnered 276 citations. Measures of informal collaboration reflect engagement in a 3-year windows. The average observation has been acknowledged 2 times by 4 different authors (out-degree). We use ranks instead of centrality scores for eigenvector and betweenness centrality to establish comparability across networks. Table A2 (in the appendix) presents corresponding Spearman correlation coefficients. It is noteworthy how weakly eigenvector centrality rank correlates with characteristics, as no coefficient surpasses 0.14.[18] The number of thanks

[18] A positive correlation indicates a negative relationship between better centrality ranks (lower numbers) and productivity or experience.

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Table 2: Summary statistics for the person sample.

	N	Mean	Median	Std.Dev.	Min	Max
Researcher Characteristics						
Euclid. Index	56276	100.7	28	259.95	0	9158
Publication stock	56276	13.9	8	18.13	0	389
Citation stock	56276	275.7	53	825.11	0	35418
Female	56276	0.2	0	0.36	0	1
Experience	56276	12.0	10	10.07	0	70
Network Centralities						
No. of Thanks	56276	2.0	1	3.40	0	98
Out-Degree	56276	4.0	2	6.65	0	123
Eigenvector centrality rank (informal)	51311	2357.3	2138	1610.28	1	6782
Betweenness centrality rank (informal)	51311	2204.7	2076	1450.80	1	5454
Giant membership (co-author)	56276	0.0	0	0.21	0	1
Degree (co-author)	25471	1.9	2	1.39	0	21
Eigenvector centrality rank (co-author)	2584	208.7	163	172.70	1	601
Betweenness centrality rank (co-author)	2584	157.9	138	113.03	1	306

Notes: Summary statistics for the person sample, where the unit of observation is the combination of researcher i and year t.

correlates with productivity measures only weakly, too: Of all the Spearman correlations between number of thanks and any of the author metrics, the highest is with the Euclidean index of citations and equals 0.38.[19]

3 The Nature of Informal Collaboration in Financial Economics

Acknowledging intellectual collaboration has become the norm in Financial Economics. 5,631 out of 6,400 papers published in the six journals during 1997 and 2011 (≈ 90%) acknowledge seminar presentations, conference participation, or researchers, or combinations of these.[20] These three types of informal collaboration do not appear to be substitutes to each other. More than half of all papers report all three forms (Figure A1 in the appendix), and less than a quarter report only one form. Figure 1 shows that while the number of papers without acknowledgement section is virtually 0 in most journals by 2011, only the Journal of Banking and Finance has a high number of papers without acknowledgements (72 out of 262 published papers in 2011).

Top journal publications acknowledge informal collaboration more often and report a higher

[19] We find the same pattern when looking at different periods individually.

[20] The remaining papers may, although rarely, acknowledge the editor, anonymous referees, funding, data exchange and research assistance only.

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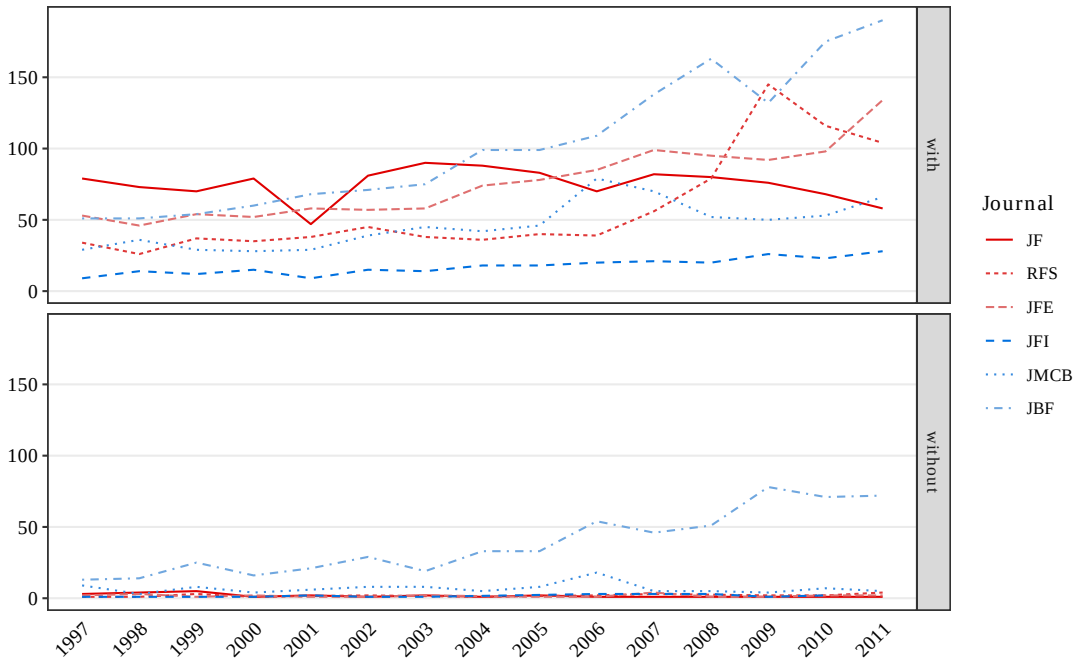
Figure 1: Papers with and without acknowledgements, by journal and year.



Notes: Graph shows the number of papers with (upper panel) and without acknowledgments section (lower panel) for each year, by journal. An acknowledgement may contain named researchers mentioned for feedback, advice and discussion (unless she's the journal's managing editor), seminars or conferences. See section 2 for variable and sample definition.

intensity thereof. In fact, the ranking of our six journals by journal impact factor reflects well the ranking according to the average intensity of informal collaboration. Conditional having an acknowledgement, the average top journal publication acknowledges almost twice as many commenters as the average non-top journal publication (10.8 vs. 6.2). It is also presented more than twice as often at seminars (6.5 vs. 3.2). Interestingly, the number of conferences is almost the same (2.9 vs. 2.2).[21]

Comparing papers over time reveals the opposite pattern. Both the average number of author-normalized commenters (number of commenters divided by number of authors) and the average number of author-normalized seminars do not increase significantly over time, but the average number of author-normalized conferences and the number of co-authors does (Figure

[21] The averages of the non-top journals are driven by the Journal of Financial Intermediation, whose average values are regularly between those of the top journals and the other non-top journals. One plausible explanation is that the JFI publishes a high amount of papers prepared for and rejected by the top journals.

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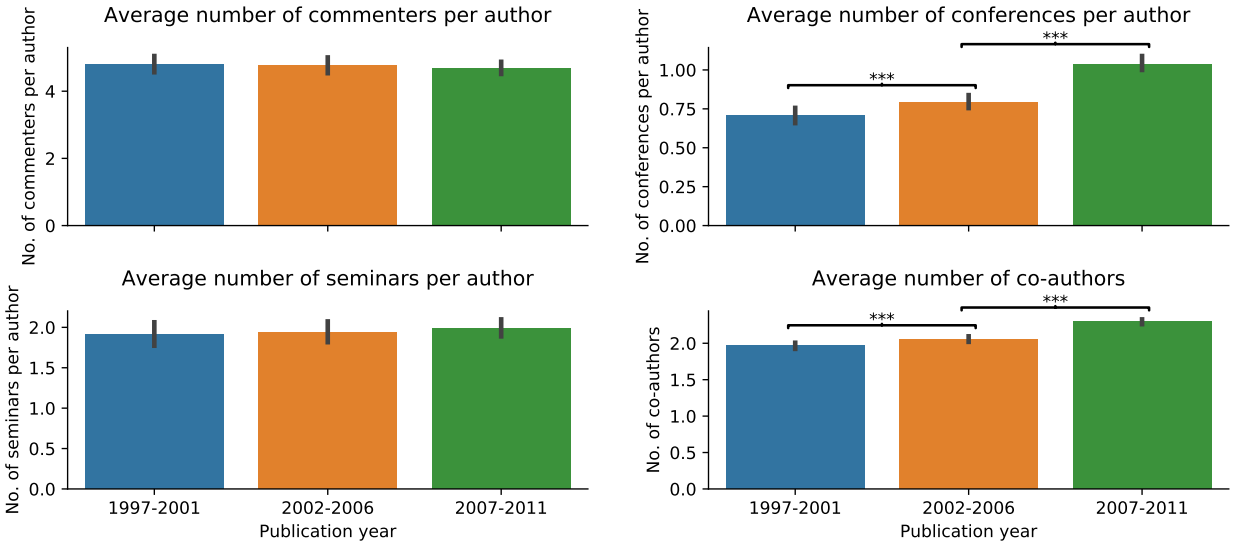
2). Papers in the 1997-2001 cohort report 0.6 conferences per author on average, while in the 2007-2011 period this figure increased to 0.85.

Figure 2: Collaboration intensity by cohort of papers.



Notes: Figures show the mean number of acknowledged author-normalized amount of informal collaboration, by cohort. Cohort is inferred form the publication year of the paper. Vertical bars indicate 95% confidence interval. Horizontal parenthesis indicate statistically significant differences, with ***, ** and * indicating statistical significance to the 1, 5 and 10 percent level.

On the other hand, we find stark generational differences as to how much an author engages in informal collaboration. Figure 3 compares the mean values of the yearly average of an author's author-normalized number of acknowledged commenters, seminars and conferences and also the number of co-authors across cohorts. That is, for each paper we count the acknowledged commenters, seminars and conferences and divide the value by the number of authors, which we then assign to each author. If an author publishes multiple times per year, we take the average. We find that the average author that started publishing in the 2000s acknowledges 5 commenters, which is significantly more than an author who started publishing in the 1990s, which is significantly more than an author who started publishing in the 1980s, and so on. The same relationship holds for seminars and conferences. Interestingly, authors from the 2000s have fewer distinct co-authors (in our dataset) than those from the 1990s, who have less then those from the 1980s.

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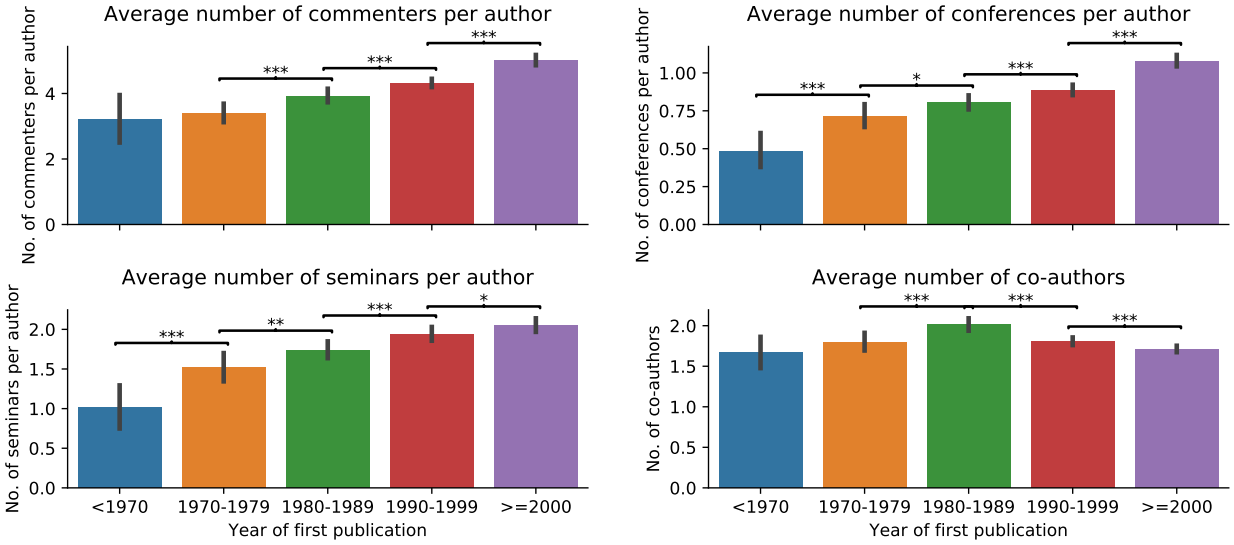
Figure 3: Collaboration intensity by cohort of author.



Notes: Figures shows the mean number of a person's yearly average number of author-normalized amount of informal collaboration, as acknowledged on published papers, by cohort. Cohort is inferred form the year of first publication of an author. Vertical bars indicate 95% confidence interval. Horizontal parenthesis indicate statistically significant differences, with ***, ** and * indicating statistical significance to the 1, 5 and 10 percent level. Figures use the paper sample. See section 2 for variable and sample definition.

A relevant question is of course whether informal collaboration matters at all. Laband and Tollison (2000) show that for 251 featured articles published in the Review of Economics and Statistics during the years 1976-1980, there is a positive correlation between the number of commenters and the subsequent citation count. Commenters that are cited more matter even more. While this study leaves endogeneity issues aside, Brown (2005) exploits submissions to three accounting journals. Studying 256 papers, he finds that papers that have been presented more often in seminars have a higher acceptance probability. Both studies (which we replicate in appendix C) have a relatively small sample size. Using our paper sample, we want to shed light on the relationship between informal collaboration and academic success. The reason informal collaboration might be positively associated with a paper's success is the very reason researchers engage in it constantly: Provided feedback can improve the quality of the paper, while presentation can help in the dissemination before and after publication. More specifi-

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cally, we estimate the following regression model:

$$\begin{aligned}\text{Success}_p = &\boldsymbol{\alpha}_1 \text{Paper Characteristics}_{p,t-1} + \beta_1 \text{No. of seminars}_p + \beta_2 \text{No. of conferences}_p \\ &+ \beta_3 \text{No. of commenters}_p + \beta_3 \text{Commenter Quality}_p + \mathbf{D}_{\text{Journal}_p} + \mathbf{D}_t + \varepsilon_p,\end{aligned} \tag{9}$$

where we measure "Success" in four ways: the citation count of paper p in July 2019, the citation count after 5 years, the citation count after 10 years, and by an indicator variable that equals one if the paper was published in a top three finance journal. "Paper Characteristics" contains the number of pages, dummies for author group size, and the authors' total Euclidean index of citations according to equation (1) in the year before publication. These variables capture a paper quality past publication. Except for top journal publication status, we also include a fixed effect for each journal to pick up journal-specific effects such as popularity, topic, and quality of the editorial process (assuming these are time-independent). To allow for more flexibility, author group size enters as dummies instead of continuous variable. Without claiming causality, table **??** shows that all variable are positively associated with paper success. The only exception is the number of conferences, which does not seem to matter for the 10-year and total citation count.

Since we do find more informal collaboration over time, but no significant differences across papers, young authors are driving the trend. It can be said that young authors network differently. We also see that papers in top journals see the same number of conferences as papers in non-top journals, but both go to more conferences in the late 2000s than in the late 1990s. At the same time authors go to more conferences the younger they are. None of this is to the detriment of other forms of informal collaboration. A possible explanation is a changing nature of job market papers. More informal collaboration in the 2000s than in previous decades due to more job presentations or preparation conferences could explain both trends. Better opportunities to attend conferences (either via cheaper transportation, more funds, or more conferences overall) may be another explanation, if the propensity to travel depends somehow on a person's experience. Exploring these possibilities may help in understanding the bigger picture-question whether more informal collaboration improved the quality of papers or science in general.

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Table 3: Citation count and informal collaboration.

	Top publication	Total citation count	5-year citation count	10-year citation count
	logistic		*negative binomial*	
	(1)	(2)	(3)	(4)
# of seminars	0.184^{***}	0.010^{***}	0.011^{***}	0.010^{***}
	$p = 0.000$	$p = 0.008$	$p = 0.0005$	$p = 0.009$
# of conferences	-0.043^{*}	0.005	0.017^{**}	-0.0003
	$p = 0.064$	$p = 0.500$	$p = 0.011$	$p = 0.968$
# of commenters	0.040^{***}	0.013^{***}	0.012^{***}	0.014^{***}
	$p = 0.00002$	$p = 0.00001$	$p = 0.00001$	$p = 0.00001$
Com. total Euclid	0.0004^{***}	0.00003^{***}	0.00003^{***}	0.00002^{**}
	$p = 0.000$	$p = 0.0004$	$p = 0.0001$	$p = 0.016$
Constant	-3.336^{***}			
	$p = 0.000$			
Paper Characteristics	✓	✓	✓	✓
Author group size-fixed effects	✓	✓	✓	✓
Publication year-fixed effects		✓	✓	✓
N	5,615	5,615	5,615	5,615
R^2	0.548			
Akaike Inf. Crit.		62,077.920	46,300.620	56,847.800

Notes: Reported coefficients are marginal effects. ***, ** and * indicate statistical significance to the 1, 5 and 10 percent level, respectively. Table uses the paper sample. See section 2 for sample and variable definition.

4 Bilateral Informal Collaboration

4.1 Who gets acknowledged?

Irrespective of generational differences, we find that in any year most researchers in our dataset are commenters that are not also authors. In total 8,122 researchers appear only as commenters, while most of the 6,406 authors are only authors (Figure A2 in the appendix). Only a minority of 1,646 researchers both comments and publishes papers in our dataset. This seems to indicate a division of labor between producers and helpers. It should be noted that among commenters who are not publishing there are industry and central bank professionals following different publication strategies. However, it stands that for every author in our dataset there are 1.26 researchers just commenting on others' work. This ratio increases to 1.63 if we consider only top journals.

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In this section we thus want to understand who is being acknowledged. It is reasonable to assume that authors turn to researchers that are both visible and productive, or that have more experience in publishing and positioning papers. We thus correlate how many papers and how many authors acknowledge someone with that person's characteristics. This ignores possible (and important) bilateral characteristics, such as being colleagues or co-authors. Using the person sample, we estimate the following regression model:

$$\begin{aligned}\text{Collaboration}_{i,t} = &\beta_0 + \beta_1 \text{female}_i + \beta_2 \text{Euclid}_{it} + \beta_3 \text{PublicationStock}_{it} + \\ &\beta_3 \text{CitationStock}_{it} + \beta_4 \text{Experience}_{it} + \beta_5 \mathbf{D}_{\text{Female}_i} + \epsilon_{it} \end{aligned} \tag{10}$$

Table 4: Negative binomial regression on engagement in informal collaboration.

	No. of Thanks		Out-Degree	
	(1)	(2)	(3)	(4)
Euclid. Index	0.001***	0.001***	0.001***	0.001***
	(0.00004)	(0.00004)	(0.00005)	(0.00005)
Publication stock	−0.004***	−0.004***	−0.005***	−0.005***
	(0.0004)	(0.0004)	(0.0004)	(0.0004)
Citation stock	0.0003***	0.0003***	0.0002***	0.0002***
	(0.00001)	(0.00001)	(0.00002)	(0.00002)
Female	−0.194***	−0.191***	−0.156***	−0.167***
	(0.014)	(0.014)	(0.014)	(0.014)
Experience	0.068***	0.068***	0.063***	0.063***
	(0.001)	(0.001)	(0.001)	(0.001)
ExperienceSQ	−0.002***	−0.002***	−0.002***	−0.002***
	(0.00004)	(0.00004)	(0.00004)	(0.00004)
Constant	0.115***	0.113***	0.817***	0.898***
	(0.011)	(0.017)	(0.011)	(0.018)
Year-fixed effects		✓		✓
N	56,276	56,276	56,276	56,276
Akaike Inf. Crit.	205,200.000	205,169.400	271,772.800	271,660.800

Notes: Standard errors clustered around individual researchers in parenthesis. ***, ** and * indicate statistical significance to the 1, 5 and 10 percent level, respectively. Table uses the person sample. See section 2 for variable and sample definition.

where "Collaboration" is either the "No. of Thanks" or "Out-Degree", i.e. how many papers or how many authors have acknowledged someone. Since both dependent variables are count data and 0's are frequent, we estimate a negative binomial regression. To account for unob-

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served heterogeneity of researchers we cluster standard error on the researcher. Marginal effects are reported in table 4. The interpretation of a marginal effect is the percentage increase of the dependent variable if the variable increases by one unit from sample mean, holding all other variables constant at their mean. We also present models with year-fixed effects to detect variation across years. We find that all characteristics correlate statistically significantly with the dependent variables, independent of whether we include year-fixed effects or not.

We find that all characteristics explain both the number of thanks and the out-degree. There are no differences across time. A striking observation is that females are acknowledged less often and have a lower out-degree, even at the same level of academic productivity and experience. On average, female researchers are acknowledged by 20% fewer papers (~ 0.4 papers) and by 15% fewer authors (~ 0.6 authors) over a three-year period. Especially this finding adds to recent debates regarding the role and perception of females in academia (Chari and Goldsmith-Pinkham, 2017; Sarsons, 2017; Hengel, 2020; Ductor et al., 2018). However the finding warrants further research to trace causes and consequences. Do we see statistical discrimination or discrimination by taste? Is the fact that females are acknowledged less often sign of sexism in the community? Is it because females are approached less often by authors? Or do females shy away from offering comments and insights to authors?

4.2 Reciprocity and Inter-Generational Transfer

The prevalence of commenting on each others work raises the question as to why researchers invest their scarce time to read manuscripts when they do not receive tangible credit for it (Malmendier et al., 2014). One possible explanation is reciprocity: Researchers help researchers who have helped them (or who are going to help them). Another explanation is inter-generational transfer. We investigate both of these possibilities below. Investigating a third plausible explanation, intrinsic motivation, is not possible with our data alone.

We define three forms of reciprocal relationships: (i) commenting on the work of one's coauthors, (ii) commenting on the work of one's commenters, (iii) commenting on the work of department colleagues. We define two researchers as colleagues on a paper if in the year before

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publication they report the same affiliation (university, central bank, etc.) on publications from that or an earlier year.

Accordingly, we define a paper p with authors κ_p as exhibiting reciprocity if it satisfies one of three conditions: 1) An acknowledged commenter is a co-author of at least one of κ_p; 2) An acknowledged commenter publishes a paper (in our dataset) and at least one of κ_p is acknowledged, while none of κ_p co-author on that paper; 3) An acknowledged commenter is a colleague of at least one of κ_p in the year before publication. Naturally, for condition 1) or 2) to hold, at least one of the acknowledged commenters must be an author in the dataset, and at least one paper of their papers is not single-authored.

We find 456 papers that acknowledge informal input from co-authors of other papers. This compares to 5,030 papers where at least one of the author's coauthors is an author in our dataset. There are 5,011 papers where we could observe reciprocity among commenters. Of these, 3,096 papers at least one acknowledged commenter in turn acknowledges at least one of the authors on her own papers. Finally, there are 1,625 papers acknowledging at least one colleague, out of 5,319 papers where we could observe acknowledged colleagues. In total, 3,615 papers (about 68% of 5,321 papers) fulfill one of the above conditions.

Our estimates should be seen as lower bound to reciprocity. For example, we only observe commenter links within a set of six journals. Financial Economics is not necessarily the natural domain of all commenters.[22] They may well acknowledge authors that acknowledged them on papers outside our dataset. Similarly, affiliation information is sometimes imperfect, posing challenges to our definition of colleagues.

Another explanation for the high engagement in informal collaboration is an implicit generational exchange or transfer of knowledge and experience. Instead of investing all their time in the production of new papers, senior researchers may choose to help young and rising authors instead. While the range of our data is too short to observe an entire generation, we can at least confirm two necessary conditions. The first is that commenting is not evenly distributed across

[22] For example, the Nobel laureate in Economics in 2014, Lars Peter Hansen, has been acknowledged by more than 20 papers in our dataset, while he didn't author one paper in our dataset. The same holds true for the 1993 Nobel laureate Douglass North, who appears in two acknowledgement sections.

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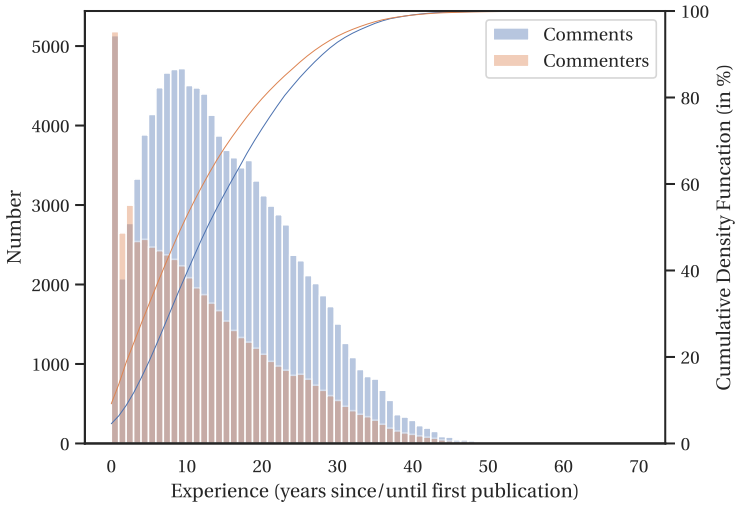
Figure 4: Histogram and CDF for number of commenters and comments by academic experience.



Notes: Histogram showing the number of commenters (green) and comments (blue) by academic experience on the left axis. Right axis shows corresponding cumulative distribution functions in percent. Experience is the number of years between first publication, as measured by Scopus, and the publication year of the paper that acknowledges the commenter.

a researcher's life-cycle. The other necessary condition is that more young authors acknowledge more senior authors more often then the other way. The green histogram and the green CDF in figure 4 show that the majority of commenters have 3 to 20 years of academic experience when the paper they are acknowledged on is published. The modal experience value is 2 years. It increases to 7 years if weighing commenters with the number of given comments (grey histogram and grey CDF).

Consequently, figure 5 shows that is more common to find informal collaboration where the author is less senior than the commenter than the other way around because the mast of observations is right of the 45° line.

The conjectured explanations for the high amount of informal collaboration need further investigation. Reciprocity alone is not a sufficient explanation, although it has been found for other scientific collaboration (Haeussler et al., 2014). Assuming that informal collaboration improves papers, one may ask whether our incentive schemes for informal collaboration are

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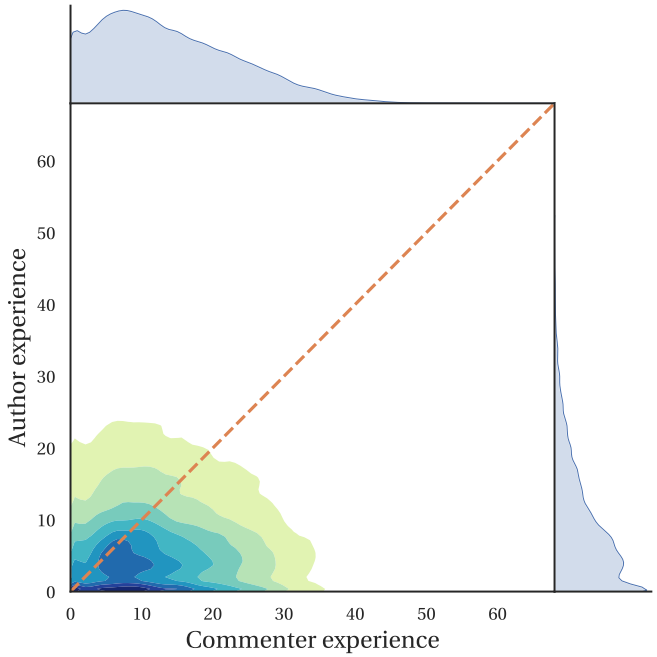
Figure 5: The distribution of authors' and commenters' experience.



Notes: Heatmap shows the joint distribution of academic experience of authors (left axis, right marginal plot) and of academic experience of commenters (bottom axis, top marginal plot). Dark areas indicate higher density. Experience is the number of years between first publication and the publication year of the paper that acknowledges the commenter.

appropriate. Perhaps science as a whole benefits from more informal collaboration might be under-provisioned (Oettl, 2012*a*). Such endeavour can help in the design of informal collaboration as an organized means to improve papers. Or they may guide the formation of young scholars in an effort to bring them to the research frontier faster (Jones, 2009).

5 The Network of Informal Collaboration in Financial Economics

5.1 Network Topology

The fact that researchers have collaborated constitutes a network which we can use to study information flow and spill-overs at an individual and a global level. To better understand the magnitude and depth of the network of informal collaboration we contrast it with co-author

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networks build from the same publications. Table 5 characterizes both types of networks for all years.

The 1999 network of informal collaboration is generated from 854 papers published in either 1997, 1998 or 1999 and consists of 3,141 researchers. In comparison, the 2011 network of informal collaboration connects 7,027 researchers that have collaborated on 1,889 papers. The number of researchers in the network grows at about the same as the number of yearly publications. This is not a trivial result: Rather than acknowledging the existing set of researchers, new authors acknowledge different researchers. This leaves unanswered why the growth rates are so close to each other.

Compared to the co-author networks, the networks of informal collaboration are more inclusive and more connected but less dense. Several figures exemplify this: (i) There are up to 898 distinct components in the co-author networks but at most 54 in the networks of informal collaboration. Networks of informal collaboration thus represent a much larger share of the profession than co-author networks alone; (ii) In the co-author networks less than a fifth of all researchers are connected within one component (which also means that the largest component can not constitute a giant component). In the networks of informal collaboration, however, the largest component consistently captures 95% or more of all researchers. The increased connectivity is also shown in figure A3 (in the appendix), comparing the 1997-1999 networks to the 2009-2011 networks. The networks graphs furthermore reveal a hierarchy in the flow of information. Collaborations occurring in top journals dominate the center of the network while collaborations in the other three journals are rarely present in the center. This is indicative of a higher connectedness of the collaborators involved in publications in top journals; (iii) Average path length and diameter are usually lower in the giant component of the network of informal collaboration than in the co-author network's largest component; (iv) Despite becoming more inclusive, both networks become less dense over time. Looking at the network of informal collaboration only, density decreased from 0.0023 in 1999 to 0.0014 in 2011. This is because the growth rate of collaboration does not keep up with the growth rate of the number of participating researchers.

None of the networks under consideration exhibit small-world properties. Small-world net-

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Table 5: Global network measures.

(a) Networks of informal collaboration

	Overall				Giant				
	Size	Links	Avg. clustering	Components	Size	Density	Avg. path length	Diameter	rho
1999	3141	10639	0.099	30	3000	0.0023	4.59	12	0.49***
2000	3283	11171	0.099	33	3112	0.0022	4.62	13	0.49***
2001	3396	11382	0.112	34	3231	0.0021	4.66	13	0.49***
2002	3556	12070	0.105	36	3383	0.002	4.74	14	0.49***
2003	3813	13496	0.106	31	3669	0.0019	4.72	13	0.51***
2004	4189	15232	0.104	34	3987	0.0018	4.64	13	0.52***
2005	4520	16909	0.103	31	4387	0.0017	4.67	13	0.49***
2006	4837	17868	0.086	37	4692	0.0016	4.76	14	0.49***
2007	5263	20928	0.091	40	5100	0.0016	4.72	16	0.50***
2008	5723	23660	0.1	43	5533	0.0015	4.66	14	0.53***
2009	6217	28351	0.105	44	6013	0.0015	4.53	14	0.54***
2010	6659	30567	0.097	48	6443	0.0014	4.57	13	0.52***
2011	7027	33248	0.103	54	6782	0.0014	4.50	15	0.52***

(b) Co-Author networks

	Overall				Giant				
	Size	Links	Avg. clustering	Components	Size	Density	Avg. path length	Diameter	rho
1999	1201	966	0.374	481	33	0.0909	3.64	8	0.37**
2000	1253	1017	0.376	496	53	0.0581	5.16	13	0.30**
2001	1322	1082	0.374	522	45	0.0616	5.97	15	0.28*
2002	1414	1156	0.366	554	61	0.0443	6.26	15	0.35***
2003	1478	1237	0.371	565	66	0.0434	5.71	13	0.29**
2004	1659	1431	0.385	603	68	0.0435	6.14	14	0.35***
2005	1794	1581	0.409	647	131	0.0222	8.34	20	0.28***
2006	2044	1789	0.41	744	65	0.0529	3.71	8	0.53***
2007	2271	2171	0.454	746	264	0.0123	9.91	26	0.15**
2008	2550	2546	0.479	791	128	0.025	5.76	12	0.32***
2009	2761	2904	0.495	787	591	0.0054	12.26	34	0.15***
2010	2959	3063	0.497	860	505	0.0064	12.64	32	0.13***
2011	3109	3236	0.488	898	601	0.0053	10.76	27	0.20***

Notes: Table presents global network statistics for all three-year networks of informal collaboration and of co-author network. Each network of informal collaboration connects researchers that have that collaborated formally (co-authoring) or informally on papers published in year t, $t-1$ or $t-2$. Each co-author network connects researchers that have jointly published a paper in year t, $t-1$ or $t-2$. *Size* is the number of researchers in the network resp. largest component. *Links* is the number of links connecting the researchers. *Components* is the number of distinct network components. *Density* is the share of realized to potential paths (equation (2)) in the largest component. *Avg. path length* is the average length of all possible paths between any two researchers in the largest component. *Diameter* is the longest of all shortest paths between all researchers in the largest component. *Avg. clustering* is the average clustering coefficient of all nodes in the network's largest component (equation (5)). *rho* is the Spearman rank correlation coefficient between all researchers' betweenness centrality (equation (8)) and Eigenvector centrality (equation (7)) in the largest component, with ***, ** and * indicating statistical significance to the 1, 5 and 10 percent level.

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works, whose name is based on the small-world phenomenon, have unique information transfer capabilities (Watts and Strogatz, 1998; Watts, 1999). A small-world network has a high clustering, a small average distance, a high number of nodes as compared to the number of links, and a giant component exists in it. The co-author networks feature too high average distance and a giant component does not exist, while for the networks of informal collaboration clustering is too low.[23] Goyal et al. (2006) in contrast report how the world of academic economists has only become a small world by the 1990-2000 period, as compared to the two previous decades.[24]

Finally we want to point out that betweenness centrality and eigenvector centrality do not strongly correlate. This is indicated by the Spearman correlation coefficient *rho* between eigenvector centrality and betweenness centrality which never exceeds 0.56. This means that researchers that are important for the flow of information (high betweenness centrality) are not often also well-suited to influence the network (high eigenvector centrality).

5.2 Centrality and Academic Productivity

Being connected to central researchers matters to researchers, because it enables access to knowledge and ideas traversing the network, and to be part of the conversation. In this section we show that our data on informal collaboration improves productivity forecasts used in the literature. Notably Ductor et al. (2014) show that an economist's future productivity can be forecasted using variables derived from a co-author network. More specifically, the productivity of current coauthors of a researcher as well as the researcher's network centrality measures contain information about her future productivity. One plausible underlying mechanism is that researchers become more productive when they have access to information traversing the network. Such forecasts are relevant for first-time hiring decisions, which for economics and finance job-market candidates are often based on a small number of signals, usually the job market paper, and eventually few other manuscripts. Ductor et al. (2014) thus state that looking at network centralities of coauthors of a job applicant, hiring departments can improve

[23] It may be that the low clustering is due to the small number of journals. However, constructing networks from the set of the three top journals only results in higher, not lower, clustering.

[24] The authors study co-author networks covering 10 years of publications in up to 105 journals listed in EconLit.

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their information about that applicant.

We follow their methodology as closely as possible.[25] The main point is not to interpret coefficients but to compare the accuracy of a prediction of future output over the next three years using observables that are available today. The first prediction serves as benchmark where only past output–weighted publication output of the past three years–is used. We add variables to the prediction group by group: first variables from the co-author network, then those from the informal collaboration network, finally both combined. Following Ductor et al. (2014) we use the Root Mean Square Error (RMSE) to compare forecast accuracy. A Diebold-Mariano test tests the hypothesis, that a given model and the benchmark model are statistically the same. We use a reduced version of the person sample, namely all those observations that are author-observations. We use the network of informal collaboration and pair it with the corresponding co-author network. Though both networks are not directly comparable to Ductor et al. (2014) due to size and range, they allow comparison with each other.

Many variables are involved in the computation. The benchmark contains the cumulative output since the start of a researcher's career until $t-5$, career time dummies, year-dummies, and the number of years since last publication. The author network variables include degree (Equation (6)), degree of order two, membership in the giant component, closeness centrality (Equation (13) in the appendix), and betweenness centrality (Equation (8)). These centralities are all computed in the co-author network of year t. Additionally, the group includes the joint productivity of co-authors as well as of co-authors of co-authors. Productivity is measured as the log-transformed weighted publication count. The Commenter network variables include the same variables as before but are exclusively computed in the network of informal collaboration in year t. Finally one variable captures recent past output, namely the log-transformed weighted sum of publications of $t, t-1, t-2$.

Table 6 presents the result of this exercise. Using recent past output as predictor explains about

[25] There are notable differences to the original study. The authors' dataset covers publications in 105 journals listed in AEA's EconLit database for the 1970-1999 period. Publications are aggregated based on author names only and stem only from these 105 journals. Our data contains publications from 6 journals published in the 1997-2011 period. Publication and productivity includes all publications (indexed in Scopus) however and name disambiguation is more sophisticated.

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half of the variance, being in line with the original study. The RMSE decreases by 26.47%. However, recent past output might not always be observable, for example for job market candidates. The high decrease is in line with original study. Variables derived from the co-author network increase prediction accuracy over the benchmark by 11.89%. Variables from the novel network of informal collaboration increase prediction slightly more, namely by 14.69% over the benchmark. Finally combining variables derived from both networks increase prediction accuracy by more than 18.18% over the benchmark. Using all available information increases prediction slightly more than using recent past output alone. This indicates that the networks contain a small amount of information on researchers with publications.

Table 6: Comparison of forecasts of researcher productivity akin to Ductor et al. (2014).

	Adj. R^2	RMSE	RMSE Differential
Benchmark	0.11	1.43	
Recent past output	0.53	1.05	26.57^{***}
Author network variables	0.32	1.26	11.89^{***}
Commenter network variables	0.36	1.22	14.69^{***}
Auth. net. and com. net. variables	0.41	1.17	18.18^{***}
All	0.54	1.04	27.27^{***}

Notes: Table compares different forecasts for academic productivity to a benchmark forecast, according to Ductor et al. (2014). RMSE is the root-mean-square error of the corresponding regression. "RMSE Differential" is the difference in the RMSE over model "Benchmark". Statistical significance levels correspond to a which a Diebold-Mariano test, whose Null Hypothesis is that the model is the same as the benchmark model. ***, ** and * indicate statistical significance to the 1, 5 and 10 percent level in Diebold-Mariano tests, respectively. Table uses all author observations from the person sample. Variable construction corresponds to Ductor et al. (2014).

The exercise shows that the network of informal collaboration contains information not embedded in corresponding co-author networks. Put differently, co-author collaboration networks are not merely a proxy for informal collaboration. Informal collaboration networks also capture a larger share of the variance. There is also a policy implication embedded namely that hiring committees could gain valuable information on an applicant by looking at the commenters she works with.

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5.3 Central Commenters and Paper Success

Not only academic careers but also academic papers could benefit from central colleagues. Authors gain access to knowledge and ideas traversing the network. In this section the unit of analysis is hence the individual paper. In section 3 we showed a positive association between informal collaboration and paper success. Starting from this observation, here we test whether the centrality of authors and acknowledged commenters in the network of informal intellectual collaboration contains information about the paper's scientific impact, over and above the measures of the author's and commenters' past academic productivity. The reason for this is that connectedness in the network provides access to information in the network, as well as to skills, insights and capacities the co-authors themselves might not possess.

Similar to model (9) above, we model the success of paper p published in year t as:

$$\begin{aligned}\text{Success}_p = &\boldsymbol{\alpha}_1 \text{Paper Characteristics}_{p,t-1} + \boldsymbol{\alpha}_2 \text{Informal Collaboration}_{p,t-1} \\ &+ \boldsymbol{\beta}_1 \text{Author centrality}_{p,t-1} + \boldsymbol{\beta}_1 \text{Commenter centrality}_{p,t-1} + \mathbf{D}_{\text{Journal}_p} + \mathbf{D}_t + \varepsilon_p,\end{aligned} \tag{11}$$

where we measure "Success" as before in four ways: the citation count of paper p in July 2019, the citation count after 5 years, the citation count after 10 years, and by an indicator variable that equals one if the paper was published in a top three finance journal. "Paper Characteristics" contains the number of pages, dummies for author group size, and the authors' total Euclidean index of citations according to equation (1) in the year before publication. "Informal Collaboration" contains all counts of acknowledged informal collaboration and the commenters' total Euclidean index of citations in the year before publication. "Author centrality" is an indicator for membership in the network's largest component, the authors' sum of betweenness centralities (equation (8)) and the sum of eigenvector centralities (equation (7)). These three concepts are computed both in the co-author network (for comparison) and the network of informal collaboration. We use the networks corresponding to $t-1$ to prevent that links observed on p influence the network position of either authors or commenters. Finally we account for a different number of years to gather citations, as well as time-variant effects using

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publication year-fixed effects.

Table 7 reports estimation results for model (11) using top journal status as dependent variable, and table 8 using citation counts. Both tables report marginal effects. They give the expected percentage increase in the dependent variable if the explanatory variable was to increase by 1 unit, holding all other variables constant at their mean and setting binary variables equal to 0.

Table 7: Top publication status and centrality in the network of informal collaboration.

	Top publication		
	(1)	(2)	(3)
Auth. giant (co-author)	1.021^{***}	0.337^{*}	0.179
	$p = 0.000$	$p = 0.060$	$p = 0.350$
Auth. eigenvector (co-author)	-2.603^{***}	-3.303^{***}	-3.650^{***}
	$p = 0.001$	$p = 0.0002$	$p = 0.0001$
Auth. betweenness (co-author)	−0.402	−0.876	0.111
	$p = 0.577$	$p = 0.340$	$p = 0.906$
Auth. giant (informal)		0.920^{***}	0.610^{***}
		$p = 0.000$	$p = 0.00000$
Auth. eigenvector (informal)		34.074^{***}	20.611^{***}
		$p = 0.000$	$p = 0.000$
Auth. betweenness (Informal)		-31.912^{***}	-33.110^{***}
		$p = 0.000$	$p = 0.000$
Com. giant (informal)			0.766^{***}
			$p = 0.00000$
Com. eigenvector (informal)			12.840^{***}
			$p = 0.000$
Com. betweenness (informal)			-7.813^{***}
			$p = 0.0003$
Constant	-3.173^{***}	-2.645^{***}	-2.499^{***}
	$p = 0.000$	$p = 0.000$	$p = 0.000$
Paper Characteristics	✓	✓	✓
Informal Collaboration	✓	✓	✓
Author group size-fixed effects	✓	✓	✓
Publication year-fixed effects	✓	✓	✓
N	5,615	5,615	5,615
R^2	0.438	0.511	0.591

Notes: Reported coefficients are marginal effects. ***, ** and * indicate statistical significance to the 1, 5 and 10 percent level, respectively. Table uses the paper sample. See section 2 for sample and variable definition.

Without claiming causality, there are three observations we would like to highlight. First, the commenters' network centrality contains information for both citation count and journal pub-

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Table 8: Citation count and centrality in the network of informal collaboration.

	Total citation count			5-year citation count	10-year citation count
	(1)	(2)	(3)	(4)	(5)
Auth. giant (co-author)	0.022	−0.043	−0.063	−0.032	−0.132**
	$p = 0.700$	$p = 0.455$	$p = 0.280$	$p = 0.521$	$p = 0.025$
Auth. eigenvector (co-author)	0.781***	0.741**	0.795***	0.632***	0.703**
	$p = 0.007$	$p = 0.011$	$p = 0.006$	$p = 0.010$	$p = 0.016$
Auth. betweenness (co-author)	−0.249	−0.642**	−0.618**	−0.542**	−0.561**
	$p = 0.313$	$p = 0.012$	$p = 0.015$	$p = 0.013$	$p = 0.029$
Auth. giant (informal)		0.143***	0.121***	0.128***	0.129***
		$p = 0.0002$	$p = 0.002$	$p = 0.0002$	$p = 0.001$
Auth. eigenvector (informal)		0.982**	0.247	0.107	−0.034
		$p = 0.011$	$p = 0.536$	$p = 0.755$	$p = 0.933$
Auth. betweenness (Informal)		8.095***	7.495***	7.954***	8.288***
		$p = 0.00000$	$p = 0.00001$	$p = 0.000$	$p = 0.00000$
Com. giant (informal)			−0.007	0.006	−0.007
			$p = 0.874$	$p = 0.885$	$p = 0.878$
Com. eigenvector (informal)			0.278**	0.365***	0.271*
			$p = 0.044$	$p = 0.003$	$p = 0.053$
Com. betweenness (informal)			2.544***	1.874***	2.331***
			$p = 0.00001$	$p = 0.0001$	$p = 0.00004$
Constant	5.106***	5.158***	5.152***	2.730***	3.847***
	$p = 0.000$	$p = 0.000$	$p = 0.000$	$p = 0.000$	$p = 0.000$
Paper Characteristics	✓	✓	✓	✓	✓
Author group size-fixed effects	✓	✓	✓	✓	✓
Publication year-fixed effects	✓	✓	✓	✓	✓
N	5,615	5,615	5,615	5,615	5,615
Akaike Inf. Crit.	62,178.990	62,110.820	62,054.670	46,297.300	56,817.360

Notes: Reported coefficients are marginal effects. ***, ** and * indicate statistical significance to the 1, 5 and 10 percent level, respectively. Table uses the paper sample. See section 2 for sample and variable definition.

lication probability above the information embedded in the aggregated network centralities of authors. This can be seen from the fact that coefficients for commenters' centralities are statistically significant in all models. Thus looking at who collaborated informally on a paper tells us about the paper.

Second, and most importantly, models with centralities computed in the network of informal collaboration outperform those models with centralities computed in the co-author network. Direct comparison of columns (1) and (2) of each table shows that measures of goodness-of-fit indicate better fit, while author centralities in the network of informal collaboration are always

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statistically significant. A plausible reason for the higher information content of networks of informal collaboration is that they capture a researcher's connectedness – and hence ability to receive traversing information – better than co-author networks.

Finally, the centrality of authors and commenters matter for publication in crucial ways. Specifically, betweenness centrality and eigenvector centrality of authors and commenters in both networks are correlated in different ways with the dependent variables. Authors and commenters with high betweenness centrality in the network of informal collaboration are associated positively with citation count (table 8), but negatively with top journal publication (table 7). This finding suggests that authors and commenters that connect different communities (high betweenness centrality) are less likely to publish in one of the top journals although their papers are cited more than the average of the journal. On the other hand, commenters that are well connected in the community and better positioned to exert influence (high eigenvector centrality) are more likely to publish in one of Finance's top journals and also to get cited more than the journal's average.

5.4 Who is central?

Having shown that collaborating with central colleagues is more beneficial than collaborating with less central colleagues we turn to the question what begets centrality. We strive to understand how centralities in the networks are related to one another and–more importantly–with observable characteristics of researchers. Considering researcher i in year t, we estimate the following empirical model

$$\begin{aligned}\text{Centrality}_{i,t} = &\beta_0 + \beta_1 \text{Euclid}_{it} + \beta_2 \text{Publications}_{it} + \beta_3 \text{Citationcount}_{it} + \\ &\beta_4 \text{female}_i + \mathbf{D}_{\text{Experience}_{it}} + \mathbf{D}_t + \epsilon_{it}\end{aligned} \tag{12}$$

where "Centrality" is one of eigenvector centrality rank and betweenness centrality rank. We include fixed effects for t to account for the growth of the network over time. We cluster standard errors on the researcher level to capture unobserved heterogeneity of which there are two

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sources. One source of heterogeneity is a different frequency in the data: Some researcher occur in all networks, while others only in one network. The other source of unobserved heterogeneity are different individual networks that authors can draw from. Since the dependent variable is a rank, a negative β indicates a positive relationship.

Table 9 presents results of OLS regressions for model (12) with different dependent variables.[26] The Euclidean index of citations is statistically significantly associated with higher betweenness centrality ranks but not so much with higher eigenvector centrality ranks, and only when accounting for the number of acknowledging papers (column 4). The number of publications is always statistically significant.[27] Citation count is statistically significantly associated with lower betweenness centrality ranks, but only when accounting for the number of papers that acknowledge someone (column 4). Female researchers are not less eigenvector central. Yet they are less betweenness central (column 3), unless one takes into account for how many papers thank them (column 4). The meaning is that females in total are less central because they are not as often acknowledged as comparable males. However, comparable males that are acknowledged as often are similarly betweenness central.

Figure 6 shows Spearman correlations over time between six variables to corroborate the finding that most often thanked researchers are not necessarily the most relevant for the flow of information (i.e. high in betweenness centrality), nor the most connected authors (i.e. high in Eigenvector centrality). The upper left panel for example confirms that being thanked often and being a very prolific academic were never the same, as the Spearman rank correlation coefficient never surpasses 0.3.

[26] For comparison we conduct a similar regression for eigenvector centrality rank, betweenness centrality rank and degree measured in the network of formal collaboration (Table A3) in the appendix. Authors that publish more are more eigenvector- and betweenness central, and also have a higher degree. These relationships may partly be mechanical since publishing often is correlated with having distinct coauthors. Citation stock negatively affects degree, meaning that authors who are cited more have fewer distinct co-authors holding constant the number of papers they have published. More experienced authors also have more distinct coauthors, albeit at a decreasing rate. Finally, authors who are more often thanked also tend to be more eigenvector central, more betweenness central and have a higher degree.

[27] This relationship may be a statistical effect resulting from the way we construct networks: Publishing more papers increases the chance of occurring multiple times in our dataset, which influences the network in two ways: First through co-authors and second through acknowledged researchers. As a result, more frequent authors have more links.

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Table 9: OLS regression on eigenvector and betweenness centrality ranks.

	Eigenvector centrality rank		Betweenness centrality rank	
	(1)	(2)	(3)	(4)
Euclid. Index	−0.193	−0.184	−0.519***	−0.505***
	(0.197)	(0.122)	(0.201)	(0.116)
Publication stock	−2.940***	−3.716***	−7.802***	−8.985***
	(0.944)	(0.757)	(1.145)	(0.860)
Citation stock	−0.080	0.046	0.013	0.204***
	(0.068)	(0.037)	(0.072)	(0.037)
Female	13.344	−19.132	88.449***	38.995
	(31.335)	(29.365)	(30.066)	(26.643)
No. of Thanks		−97.839***		−148.986***
		(6.630)		(11.478)
Year-fixed effects	✓	✓	✓	✓
Experience-fixed effects	✓	✓	✓	✓
N	51,311	51,311	51,311	51,311
Adjusted R^2	0.173	0.213	0.202	0.317

Notes: Standard errors clustered around individual researchers in parenthesis. ***, ** and * indicate statistical significance to the 1, 5 and 10 percent level, respectively. See section 2 for variable definition.

Since the correlations with existing measures of productivity are so low we argue that centrality in the network of informal collaboration constitutes a new ranking. To make the analysis more palpable table 10 hence ranks researchers from the person sample based on their *average* rankings according to different measures. In online appendix D we present tables with yearly rankings, while we make the full list available online. In doing so we follow the example of Laband and Tollison (2003) who compile a list of the most often thanked authors from a sample of three general interest Economics journals over forty years. Our sample however uses a more homogeneous sample[28] and adopts a network view. (). We rank researchers according to how often they have been acknowledged, according to their eigenvector centrality and betweenness centrality in the network of informal collaboration, and according to their eigenvector centrality and betweenness centrality in the co-author network.

Some of the greatest financial economists of our time are prominently featured in the ranking. Stulz, R. M. has been acknowledged most often, followed by Stein, J. C. and Ritter, J. R. An interesting observation is that many of the highly ranked researchers are editors. This is despite their

[28] General interest journals in Economics publish papers from a wider range of topics than do journals in Financial Economics.

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removal from the acknowledgment section, if the publication date of a paper falls within the editors' tenure. If editors are ranked higher on average it is because researchers acknowledge them even when the paper is not being published in their journal. This suggests an exposed role for editors in the profession (Brogaard et al., 2014).[29]

[29] An alternative explanation is that editors are being acknowledged even when they rejected the paper.

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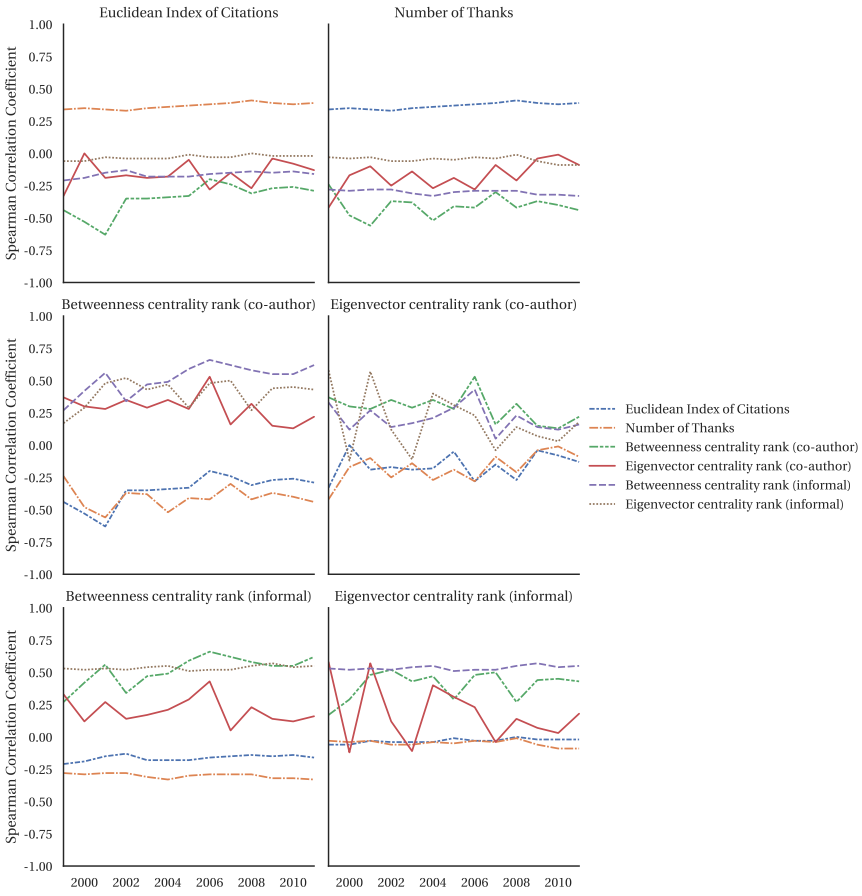
Figure 6: Spearman rank correlation coefficients between various variables over time.



Notes: Figures depict Spearman rank correlation coefficients over time for various variables. Figure uses the person sample. See section 2 for sample and variable definition.

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Table 10: Top 30 researchers according to average rankings according to different centrality measures in all co-author and commenter networks.

	Network of informal collaboration			Co-author network	
	Thanks	Eigenvector centrality	Betweenness centrality	Eigenvector centrality	Betweenness centrality
1	Stulz, R. M.	Sensoy, B. A.	Stulz, R. M.	Lin, C.	Shivdasani, A.
2	Stein, J. C.	Yun, H.	Berger, A. N.	Liu, J.	Chen, J.
3	Ritter, J. R.	Korteweg, A.	Titman, S. D.	Ma, Y.	Lemmon, M. L.
4	Shleifer, A.	Stulz, R. M.	Shleifer, A.	Cummins, J. D.	Altman, E. I.
5	Titman, S. D.	Hsu, P. H.	Ritter, J. R.	Cull, R. J.	Okunev, J.
6	Campbell, J. Y.	Xuan, Y.	Harvey, C. R.	Xuan, Y.	Chordia, T.
7	Amihud, Y.	Chen, H.	Flannery, M. J.	Weiss, M. A.	Cao, C. Q.
8	Zingales, L.	Ghent, A. C.	Graham, J. R.	Clarke, G. R.	Goldstein, I.
9	Green, R. C.	Lyon, J. D.	Ferson, W. E.	Lim, T.	Liu, J.
10	Ferson, W. E.	Baker, M. P.	Karolyi, G. A.	Lin, P.	Ryngaert, M. D.
11	Harvey, C. R.	Duchin, R.	Zingales, L.	Walter, I.	Walter, I.
12	Duffie, J. D.	Wurgler, J.	Stein, J. C.	Chen, J.	Hancock, D. G.
13	Fama, E. F.	Sevick, M.	Amihud, Y.	Zou, H.	Haubrich, J. G.
14	Jagannathan, R.	Zhang, L.	Duffie, J. D.	Scalise, J. M.	Cooney, J. W.
15	Petersen, M. A.	Kim, Y. C.	Hirshleifer, D.	Hancock, D. G.	Mester, L. J.
16	Schwert, G. W.	Tsai, C.	Saunders, A.	Zi, H.	Lo, A.
17	Flannery, M. J.	Chava, S.	Campbell, J. Y.	Neis, E.	Brav, A.
18	Brennan, M. J.	Seru, A.	Fohlin, C.	Kashyap, A. K.	Stulz, R. M.
19	Rajan, R. G.	Laeven, L.	Boudreaux, D. J.	Mithal, S.	Kang, J.
20	Berger, A. N.	Roussanov, N.	Petersen, M. A.	Haubrich, J. G.	Hughes, J. P.
21	French, K. R.	Woo, S.	Khan, M. A.	Wang, A. W.	Sias, R. W.
22	Cochrane, J. H.	Graham, J. R.	Levine, R. L.	Bonime, S. D.	Berlin, M.
23	Daniel, K. D.	Tian, X.	Ongena, S.	Song, F. M.	Davidson, I. R.
24	Allen, F.	Van Hemert, O.	Woo, D.	Cao, C. Q.	Chiang, R. C.
25	Kaplan, S. N.	Kuehn, L. A.	Servaes, H.	Piazzesi, M.	Gosnell, T. F.
26	Diamond, D. W.	Greenwood, R. M.	Weisbach, M. S.	Ahn, H.	Moon, C.
27	Karolyi, G. A.	Huang, J.	Brav, A.	Covitz, D. M.	Berger, A. N.
28	O'Hara, M.	Chordia, T.	Starks, L. T.	Lo, A.	Cull, R. J.
29	Scharfstein, D. S.	Knoeber, C. R.	Strahan, P. E.	Michael, F. A.	Wilson, B. K.
30	Gromb, D.	Lu, Y.	Lemmon, M. L.	Liu, P.	Hong, H.

Notes: Table ranks researchers based on their average ranking according to various measures derived from publications in six Financial Economics journals published between 1997 and 2011. See section 2 for variable definition.

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6 Concluding Remarks

The nascent literature on collaboration in academia focuses mostly on formal collaboration, i.e. co-authorship, but most collaboration among researchers in Financial Economics is informal. Our dataset of 5,631 acknowledgements in Financial Economics facilitates studying informal collaboration, its effects, consequences and causes. We show that the data contain information not captured by co-authorship networks. The data is novel, high-quality and freely available.

Many avenues for further research open up from our work: One tackles the topology of the network and its impact on and the relation to the profession. The topology of these networks affects the speed of learning and the diffusion of information (Alatas et al., 2016) and is thus of interest for aggregate productivity. There are warning signs, too. Scientific progress depends on the open articulation of thought. Too strong authority (or leadership) may have a negative effect, as it prevents theories to be challenged (Azoulay et al., 2019). Too much close networks might result in biased academic reviews (Carrell et al., 2020). Another avenue is to add new insights into the division of labor in academic teams. There is a wide range of activities that are necessary for scientific innovation (Haeussler and Sauermann, 2016). Not all of these need to be performed by authors: Authors can outsource activities that do not justify co-authorship alone. Put differently, a group of researchers produces an academic paper, but this research group may be different from the actual authors (Ponomariov and Boardman, 2016). Finally we can gain many new insights from understanding the network formation process better: Which role do geography, field, experience and affiliation play? Such insights could guide research policy and also help large, highly innovative firms where groups compete internally and collaborate spontaneously to innovate.

These questions are relevant to the profession and the data we offer can help gaining broader understanding of the role informal collaboration plays in the creation of knowledge.

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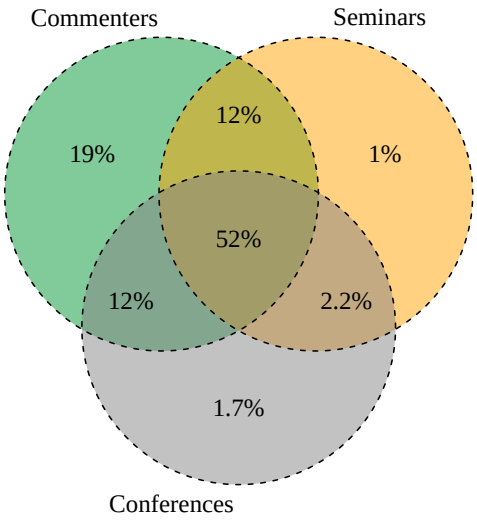
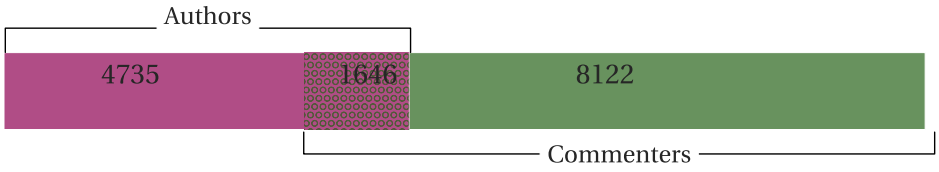
A Additional tables and figures

Figure A1: Share of papers jointly acknowledging researchers by name, seminars and conferences.



Notes: Venn diagram shows the share of papers that acknowledge commenters, seminars and conferences, and combinations thereof. Figure uses the paper sample.

Figure A2: Number of authors and commenters in our dataset.



Notes: Graph shows the number of authors of papers and acknowledged commenters in the acknowledgement sections in those papers in our dataset.

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Table A1: Correlation coefficients for the paper sample.

Total citation count														
Top publication	0.49													
# of pages	0.37	0.54												
# of authors	0.14	0.09	0.04											
Auth. total Euclid	0.23	0.23	0.17	0.55										
# of seminars	0.27	0.45	0.38	0.09	0.18									
# of conferences	0.14	0.20	0.20	0.20	0.16	0.44								
# of commenters	0.27	0.40	0.35	-0.03	0.01	0.43	0.34							
Com. total Euclid	0.27	0.45	0.36	0.04	0.19	0.45	0.32	0.73						
Auth. eigenvector (co-author)	0.09	0.15	0.09	0.16	0.25	0.12	0.10	0.11	0.18					
Auth. betweenness (co-author)	0.09	0.13	0.08	0.16	0.23	0.11	0.09	0.09	0.15	0.84				
Auth. eigenvector (informal)	0.27	0.36	0.27	0.28	0.41	0.29	0.22	0.25	0.37	0.35	0.33			
Auth. betweenness (Informal)	0.26	0.31	0.26	0.36	0.54	0.27	0.23	0.23	0.35	0.34	0.32	0.78		
Com. eigenvector (informal)	0.29	0.49	0.36	0.09	0.20	0.42	0.32	0.56	0.67	0.23	0.19	0.54	0.55	
Com. betweenness (informal)	0.26	0.38	0.33	0.08	0.18	0.37	0.29	0.55	0.68	0.20	0.16	0.51	0.55	0.89

Notes: Spearman correlation coefficients for paper sample, where the unit of observation is the a published research paper. See section 2 for variable definition.

Table A2: Correlation coefficients for the person sample.

Researcher Characteristics											
Euclid. Index											
Publication stock	0.81										
Citation stock	0.99	0.87									
Female	-0.13	-0.17	-0.14								
Experience	0.78	0.81	0.80	-0.18							
Network Centralities											
No. of Thanks	0.38	0.22	0.37	-0.09	0.25						
Out-Degree	0.36	0.21	0.35	-0.07	0.23	0.93					
Eigenvector centrality rank (informal)	0.03	0.05	0.03	0.00	0.14	-0.04	-0.02				
Betweenness centrality rank (informal)	-0.09	-0.09	-0.09	0.05	0.03	-0.28	-0.29	0.64			
Degree (co-author)	0.25	0.21	0.25	-0.02	0.15	0.20	0.20	-0.12	-0.20		
Eigenvector centrality rank (co-author)	-0.02	-0.08	-0.04	0.04	-0.03	-0.05	-0.04	0.20	0.25	-0.11	
Betweenness centrality rank (co-author)	-0.12	-0.19	-0.14	0.09	-0.08	-0.25	-0.23	0.43	0.52	-0.41	0.59

Notes: Spearman correlation coefficients for person sample, where the unit of observation is the combination of researcher i and year t. See section 2 for variable definition.

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Table A3: Regression results for OLS estimation explaining centrality in the co-author networks.

	Degree	Eigenvector centrality rank	Betweenness centrality rank
	(1)	(2)	(3)
Publication stock	−0.0003	0.051	0.038
	(0.001)	(0.038)	(0.027)
Citation stock	0.009***	−0.442	−0.414
	(0.002)	(0.336)	(0.406)
Female	0.0003	−0.018	−0.021**
	(0.0002)	(0.011)	(0.010)
Experience	−0.007	−4.783	4.601
	(0.041)	(8.839)	(4.827)
Year-fixed effects	✓	✓	✓
Experience-fixed effects	✓	✓	✓
N	25,471	2,584	2,584
Adjusted R^2	0.070	0.391	0.555

Notes: Standard errors clustered around individual researchers in parenthesis. ***, ** and * indicate statistical significance to the 1, 5 and 10 percent level, respectively. See section 2 for variable definition.

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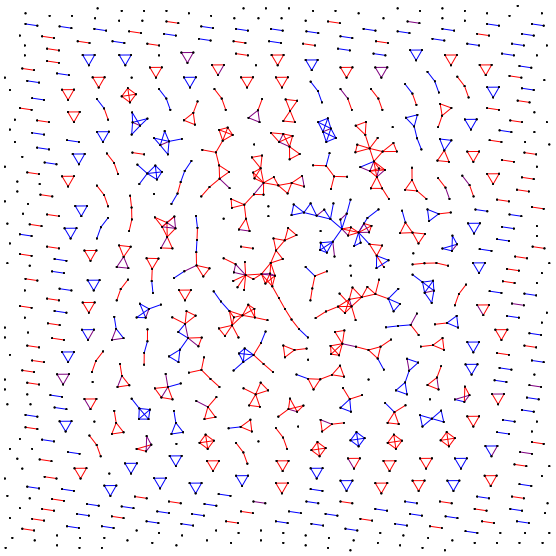
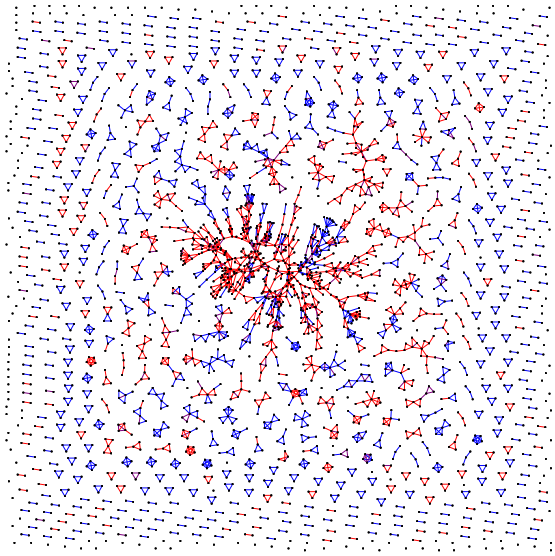
Figure A3: Comparison of networks of informal and formal collaboration, 1997-1999 and 2009-2011.

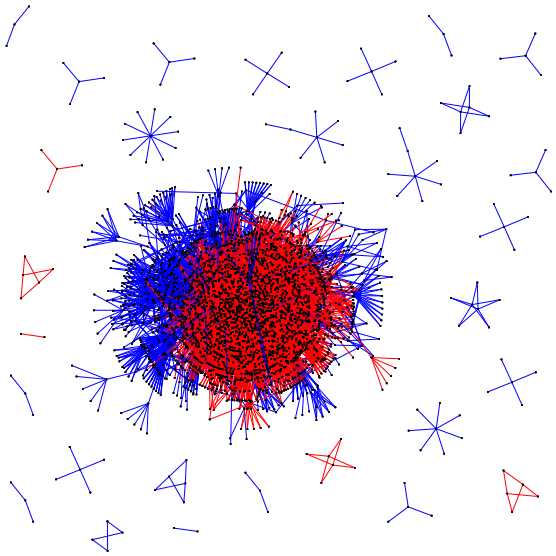
(a) Network of formal collaboration, 1997-1999



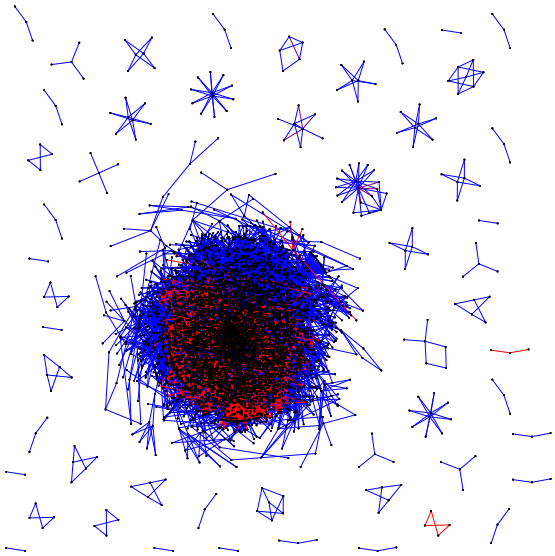
(b) Network of formal collaboration, 2009-2011



(c) Network of informal collaboration 1997-1999



(d) Network of informal collaboration, 2009-2011



Notes: Figures show networks of formal collaboration (top) and networks of informal collaboration (bottom) for publications in six Financial Economics journals published between 1997 and 1999 (left) and 2009 and 2011 (right). In the network of formal collaboration, a link is drawn between every author of a published paper. In the network of informal collaboration, a link is drawn between an acknowledged commenter and every author of a published paper. Red links indicate that the paper was published in a top journal, while blue indicates a publication on other journals. If a link occurs in both a top journal and other journals, which is a rare event, the link is colored in purple. Graph layout according to the Fruchterman-Reingold algorithm.

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B Further notes on the data

B.1 Data collection

A procedure is necessary to link researchers in our dataset with the Scopus Author profiles. For researchers that authored a paper in our database we simply use the title of the publication(s) to match author and corresponding Scopus profile. The match of acknowledged commenters who are not also authors in our database follows a more sophisticated procedure because there is no ground truth against which we could evaluate the match. There are two general conditions to match a commenter with a Scopus Author profile: First, the profile is classified by Scopus as working in at least one of the fields "Economics, Econometrics and Finance" or "Business, Management and Accounting", and second it does not include more than 5% of publications in journals outsides these fields. If only one match is found against the Scopus database via a simple name search, we immediately equate name and profile. If the search returns less than 5 profiles satisfying above conditions, and they are identical in name and affiliation, we take the profile with the highest publication count. In case more profiles are returned, or the returned profiles do not match in affiliation and/or name, we perform a manual search for all individuals that are acknowledged more than 3 times. As a final quality assessment, we manually look into all profiles that published in a journal where no one else in our database published in, and if necessary correct manually.

B.2 Strategic Acknowledging

An important question to address is whether authors use their acknowledgements (predominantly) strategically. We define two forms of strategic acknowledging. The first form follows Hamermesh (1992, p. 171) and describes the author's attempt to influence an editor by acknowledging "someone who has not seen the paper, as a talisman against that person being chosen" as referee. Even though there might be conflicting views,[30] the general assumption

[30] Other authors have indicated they believe that editors would prefer to pick acknowledged commenters.

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seems to be that editors do not pick already acknowledged commenters.[31] According to this assumption, authors would want to thank someone that has a reputation of being a tough referee ("Cite your friends, acknowledge your foes."). In their second form of strategic acknowledging authors try to signal quality to readers, most importantly to the editor in order to increase publication chances.

If these forms of strategic acknowledging exist, they can harm our analysis in two ways: First, authors acknowledge researchers they didn't actually speak to but we nonetheless assume a link between those two. Second, authors actually spoke to the researcher but only in order to acknowledge her, while what the person recommended or suggested in order to improve the paper is secondary. We believe authors do not acknowledge someone who has not actually given a comment. This would be outright fraud and carries a high reputation risk. If that person learns about it (e.g. during the review process), it will reflect badly on the author. In his "Guide to Professional Etiquette" Hamermesh (1992, p. 171) writes "DON'T PLAY THESE GAMES - the gains are not worth the potential cost of being caught" (emphasis in the original). That authors approach seniors and more well-known researchers in the field is certainly prevalent, but we believe it is rare that authors do not make use of a comment or suggestion from that person. Authors identify scholars that they think might be of help for an ongoing research project and with whom they subsequently try to collaborate. For our analysis it is not relevant why scholars discuss with each other, as long as they actually collaborate.

Nonetheless, we do not observe that authors dominantly acknowledge researchers with high reputational value. We observe than half of all papers acknowledge individuals that no other publication in our dataset acknowledges. Also, as section 5.4 showed, being thanked often and being prolific (i.e. having a high reputational value) correlate only mildly (Figure 6). Finally, the vast majority of authors sort acknowledged authors alphabetically, and not by signalling content. These observations speaks against the view that all acknowledged commenters are put down for strategic reasons, as there is little signaling value in thanking researchers that are relatively unknown to Financial Economics as a field.

[31] Editors of various journals have indicated to us that they seldom exclude a potential referee simply because this person is acknowledged. Also, not all editors explicitly look into the acknowledgment section when selecting a referee.

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Finally, both forms of strategic acknowledging predict similar behaviour of authors which we do not observe in our data. In order to increase the strength of the signal, authors would sort acknowledged commenters by signalling content to avoid that an influential name gets lost. Instead we observe that commenters are sorted alphabetically. If there is ordering, then to favor editors and anonymous referees. A similar argument applies to the order of the various forms of informal collaboration: We do not see that commenters are always listed first in the acknowledgement section. Sometimes authors list seminars, conferences, research assistance or funding before commenters.

B.3 Closeness centrality

Closeness centrality as a measure of a researcher's relative distance to the network (Bavelas, 1950). For n researchers, closeness centrality is the inverse of the average distance of researcher i to other researchers:

$$\text{closeness}_i = \frac{n-1}{\sum_{j \neq i} \sigma(i,j)} \tag{13}$$

C Replication of Laband and Tollison (2000) and Brown (2005)

To show that our data is akin to the data used in the literature, we replicate the major results of Laband and Tollison (2000) and Brown (2005). Both studies regress a paper's citation count on the amount of informal intellectual collaboration.

Laband and Tollison (2000) use 251 featured articles published in the Review of Economics and Statistics during the years 1976-1980. They estimate the effect of the number of acknowledged commenters to explain the number of citations the paper receives over the following six years. Controls include the cumulative stock of citations from the previous five years for all authors, as well as the number of pages. The number of commenters is statistically significantly and positively associated with the paper's citation count. In alterations to the model the authors add

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the commenters' joint citation stock over the previous five years, and the count of commenters that are a) not at the same department as the authors, b) on one of the author's dissertation committee, c) at the same department as one of the authors, and d) commenter not belonging to one of the previous groups. Columns (1) through (3) in table A4 replicate model (1) through (3) of table 4 of Laband and Tollison (2000). While models (1) and (2) are similar, in model (3) we find the number of acknowledged commenters still to be statistically and economically significant unlike Laband and Tollison (2000).

Brown (2005) uses a negative binomial regression similar to ours and a sample of 256 papers published in The Accounting Review, the Journal of Accounting Research, and the Journal of Accounting and Economics during 2000-2002. The dependent variable to measure publication success is the number of citations since publication according to the Social Science Citation Index. His main explanatory variables are the number of commenters, the number of conferences, and the number of seminars. Brown (2005) controls for the number of pages, the number of authors, whether the paper was often downloaded from SSRN, and also uses journal- and time-fixed effects. He finds that only seminars have a statistically significant and positive impact on citation count. Estimating the impact of acceptance probability on the journal he edited—The Accounting Review—he finds that all forms of informal intellectual collaboration matter. Column (4) of table A4 replicates Brown (2005, Table 8C), with the difference that we do not control for the number of downloads from SSRN. Unlike Brown (2005) we find a statistically significant relationship between the number of commenters and citation count, even after controlling for the number of acknowledged seminars and conferences.

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Table A4: Regression results replicating parts of Laband and Tollison (2000) and Brown (2005)

	Six-year citations			Total citations
	OLS			*neg. binomial*
	(1)	(2)	(3)	(4)
Authors' 5-year cites	0.009***	0.008***	0.009***	
	(0.0004)	(0.0005)	(0.0005)	
No. of pages	0.794***	0.880***	0.787***	
	(0.064)	(0.065)	(0.067)	
No. of authors				0.183***
				(0.017)
No. of commenters	1.194***		0.813***	0.021***
	(0.099)		(0.127)	(0.002)
Commenters' 5-year cites		0.001***	0.001***	
		(0.0001)	(0.0001)	
No. of seminars				0.014***
				(0.004)
No. of conferences				−0.003
				(0.008)
Constant	−0.368	2.943	−0.035	5.197***
	(1.741)	(1.796)	(1.849)	(0.078)
Journal-fixed effects				✓
Publication year-fixed effects				✓
N	5,604	5,333	5,333	5,615
Adjusted R^2	0.140	0.142	0.148	
Akaike Inf. Crit.				62,376.730

Notes: ***, ** and * indicate statistical significance to the 1, 5 and 10 percent level, respectively. Columns (1) through (3) replicate models (1) through (3) of Laband and Tollison (2000, Table 4). Column (3) replicates Panel B of Brown (2005, Table 8), with a slightly different variable definition and without the SSRN control variable. Reported coefficients in column 4 are marginal effects and show the per cent increase in the citation count in response to a 1 unit increase in the independent variable, holding all variables at their mean and setting binary variables to 0. *Authors' 5-year cites* is the sum of individual citation stocks (according to Scopus) for all authors for the five years prior to the publication year. *Commenters' 5-year cites* is the sum of individual citation stocks for all commenters acknowledged for concept-related input (excluding editors) for the five years prior to the publication year. See section 2 for definition of other variables.

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D Appendix to Appear Online

The following tables rank researchers in our dataset according to two different centrality measures in both the co-author and the commenter network, as well as the number of times they are acknowledged, by 3-year period. The complete ranking can be found at http://www.central-places.net/index.

Table A5: Ranking according to different centrality measures in the co-author and commenter networks for 1999, ranks 1 through 30.

	Network of informal collaboration			Co-author network	
	Thanks	Eigenvector centrality	Betweenness centrality	Eigenvector centrality	Betweenness centrality
1	Stulz, R. M.(380.0)	Fama, E. F.(806.1)	Stulz, R. M.(380.0)	Saunders, A.(91.4)	Berger, A. N.(201.7)
2	Ritter, J. R.(323.7)	Chalmers, J. M.(4.1)	Netter, J. M.(41.0)	Gande, A.(8.1)	Saunders, A.(91.4)
3	Titman, S. D.(286.1)	Parrino, R.(10.4)	Berger, A. N.(201.7)	Puri, M.(20.1)	DeYoung, R. E.(22.3)
4	Rajan, R. G.(167.5)	Rouwenhorst, K. G.(33.0)	Ritter, J. R.(323.7)	Berger, A. N.(201.7)	Altman, E. I.(477.0)
5	Kaplan, S. N.(169.9)	Lamont, O. A.(37.2)	Gorton, G. B.(79.0)	Walter, I.(34.8)	Mester, L. J.(96.6)
6	Berger, A. N.(201.7)	Musto, D. K.(3.0)	Shleifer, A.(454.5)	Udell, G. F.(55.7)	Goldberg, L. G.(55.0)
7	Zingales, L.(53.0)	Sarin, A.(31.6)	Titman, S. D.(286.1)	Scalise, J. M.(16.0)	Aggarwal, R.(23.3)
8	Ferson, W. E.(142.3)	Fluck, Z.(5.2)	Megginson, W. L. B.(73.9)	Mei, J.(22.5)	Okunev, J.(14.2)
9	Fama, E. F.(806.1)	Denis, D. K.(61.4)	Brennan, M. J.(259.1)	Angbazo, L. A.(2.2)	Wilson, B. K.(5.1)
10	Amihud, Y.(351.1)	Gompers, P. A.(36.8)	Ferson, W. E.(142.3)	Altman, E. I.(477.0)	Strahan, P. E.(22.3)
11	Brennan, M. J.(259.1)	Stulz, R. M.(380.0)	Kashyap, A. K.(106.4)	Wilson, B. K.(5.1)	Walter, I.(34.8)
12	Denis, D. K.(61.4)	Edelen, R. M.(0.0)	Rajan, R. G.(167.5)	Mester, L. J.(96.6)	Scalise, J. M.(16.0)
13	Opler, T. C.(40.2)	Zingales, L.(53.0)	Kroszner, R. S.(15.2)	Strahan, P. E.(22.3)	Mei, J.(22.5)
14	Brown, D. T.(28.3)	Titman, S. D.(286.1)	Madhavan, A. N.(98.9)	Demsetz, R. S.(8.2)	Singer, H. J.(0.0)
15	Kane, E. J.(145.2)	Tufano, P.(43.2)	Cao, C. Q.(51.7)	DeYoung, R. E.(22.3)	Weston, J. P.(10.0)
16	Allen, F.(124.3)	Minton, B. A.(41.9)	Viswanathan, S.(70.1)	Berlin, M.(33.6)	Angel, J. J.(12.6)
17	Jagannathan, R.(147.8)	Keim, D. B.(434.9)	O'Hara, M.(158.7)	Lang, W. W.(23.1)	White, L. J.(50.6)
18	Thakor, A. V.(165.3)	Kadlec, G. B.(35.6)	Opler, T. C.(40.2)	Hughes, J. P.(33.4)	Moon, C.(21.3)
19	Zenner, M.(28.9)	Gilson, S. C.(167.4)	Udell, G. F.(55.7)	Moon, C.(21.3)	Berlin, M.(33.6)
20	Vishny, R. W.(423.0)	Welch, I.(195.4)	Choe, H. J.(35.8)	Aggarwal, R.(23.3)	Chiang, R. C.(18.9)
21	Udell, G. F.(55.7)	Cooper, M. J.(0.0)	Benston, G. J.(141.6)	Eberhart, A. C.(40.1)	Kane, E. J.(145.2)
22	Harris, L. E.(233.2)	Hanka, G.(1.0)	Zingales, L.(53.0)	Goldberg, L. G.(55.0)	Gray, I.(0.0)
23	Benston, G. J.(141.6)	Harford, J.(0.0)	Whaley, R. E.(249.7)	Kane, E. J.(145.2)	Gosnell, T. F.(18.7)
24	French, K. R.(738.8)	Weisbach, M. S.(259.9)	Saunders, A.(91.4)	White, L. J.(50.6)	Eberhart, A. C.(40.1)
25	Hirshleifer, D.(147.4)	Shumway, T.(10.0)	Fleming, J.(21.3)	Weston, J. P.(10.0)	Hasan, I.(7.1)
26	Smith, C. W.(584.7)	Shleifer, A.(454.5)	Hubbard, R. G.(86.4)	Hasan, I.(7.1)	Udell, G. F.(55.7)
27	Ruback, R. S.(576.9)	Kang, J.(34.3)	Jones, S. L.(12.2)	Gray, I.(0.0)	Gande, A.(8.1)
28	Madhavan, A. N.(98.9)	Esty, B. C.(14.8)	Amihud, Y.(351.1)	Singer, H. J.(0.0)	Angbazo, L. A.(2.2)
29	Mikkelson, W. H.(322.0)	Phillips, G. M.(20.0)	Smith, B. D.(115.6)	Angel, J. J.(12.6)	Demsetz, R. S.(8.2)
30	Harvey, C. R.(175.1)	Servaes, H.(160.2)	Flannery, M. J.(155.2)	Okunev, J.(14.2)	Davidson, I. R.(11.0)

Notes: Table ranks researchers based on various measures derived from publications in six financial economics journals published between 1997 and 1999. "Thanks" is the number of publications in this period that acknowledge the researcher for feedback, unless he was managing editor of that publication during the 1997-1999 period. See section 2 for variable definition.

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Table A6: Ranking according to different centrality measures in the co-author and commenter networks for 2000, ranks 1 through 30.

	Network of informal collaboration			Co-author network	
	Thanks	Eigenvector centrality	Betweenness centrality	Eigenvector centrality	Betweenness centrality
1	Stulz, R. M.(422.4)	Brav, A.(46.8)	Stulz, R. M.(422.4)	Berger, A. N.(232.9)	Saunders, A.(102.6)
2	Ritter, J. R.(368.5)	Graham, J. R.(31.6)	Berger, A. N.(232.9)	Saunders, A.(102.6)	Berger, A. N.(232.9)
3	Titman, S. D.(323.7)	Zingales, L.(82.2)	Shleifer, A.(554.8)	Udell, G. F.(65.6)	John, K.(200.1)
4	Rajan, R. G.(221.6)	Fluck, Z.(11.5)	Rajan, R. G.(221.6)	Cummins, J. D.(46.5)	Sundaram, R. K.(34.7)
5	Berger, A. N.(232.9)	Fama, E. F.(936.8)	Megginson, W. L. B.(104.8)	Weiss, M. A.(20.4)	Yermack, D. L.(65.5)
6	Flannery, M. J.(166.7)	Wurgler, J.(4.5)	Ritter, J. R.(368.5)	Scalise, J. M.(20.0)	Shivdasani, A.(85.5)
7	Shleifer, A.(554.8)	Gompers, P. A.(61.1)	Netter, J. M.(46.4)	Hancock, D. G.(80.4)	Kang, J.(46.5)
8	Ferson, W. E.(154.3)	Lamont, O. A.(56.3)	Gorton, G. B.(89.4)	Zi, H.(6.8)	Stulz, R. M.(422.4)
9	Zingales, L.(82.2)	Chalmers, J. M.(9.2)	Zingales, L.(82.2)	Wilson, B. K.(8.7)	Flannery, M. J.(166.7)
10	Amihud, Y.(397.8)	Ritter, J. R.(368.5)	Kashyap, A. K.(124.2)	Bonime, S. D.(0.0)	Houston, J. F.(37.2)
11	Kaplan, S. N.(189.5)	Puri, M.(28.2)	Saunders, A.(102.6)	Covitz, D. M.(0.0)	Wilson, B. K.(8.7)
12	Fama, E. F.(936.8)	Lerner, J.(53.5)	Ferson, W. E.(154.3)	Flannery, M. J.(166.7)	Hancock, D. G.(80.4)
13	Allen, F.(136.2)	Rouwenhorst, K. G.(45.0)	Brennan, M. J.(282.7)	John, K.(200.1)	Opler, T. C.(49.3)
14	Stein, J. C.(217.8)	Metrick, A.(20.2)	Titman, S. D.(323.7)	Strahan, P. E.(33.1)	Ryngaert, M. D.(98.6)
15	Petersen, M. A.(163.3)	Myers, S. C.(1138.3)	Flannery, M. J.(166.7)	Davies, S. M.(8.3)	Caprio, G.(22.5)
16	Denis, D. K.(81.8)	Khanna, N.(19.5)	Madhavan, A. N.(130.4)	Demsetz, R. S.(18.4)	Ofek, E.(111.2)
17	Thakor, A. V.(188.1)	Flannery, M. J.(166.7)	Vishny, R. W.(517.2)	Senbet, L. W.(176.9)	Puri, M.(28.2)
18	Brennan, M. J.(282.7)	Rajan, R. G.(221.6)	Opler, T. C.(49.3)	Caprio, G.(22.5)	Kane, E. J.(150.9)
19	French, K. R.(873.5)	Barber, B. M.(94.3)	Viswanathan, S.(88.1)	Puri, M.(28.2)	Strahan, P. E.(33.1)
20	Hirshleifer, D.(186.8)	Weisbach, M. S.(298.8)	O'Hara, M.(185.1)	Gande, A.(13.9)	Humphrey, D. B.(185.1)
21	Jagannathan, R.(194.7)	Stulz, R. M.(422.4)	Blanchard, O. J.(403.6)	Angbazo, L. A.(3.6)	Weiss, M. A.(20.4)
22	Kane, E. J.(150.9)	Odean, T.(34.9)	Puri, M.(28.2)	Mei, J.(35.0)	Cummins, J. D.(46.5)
23	Madhavan, A. N.(130.4)	Maksimovic, V.(32.4)	Kroszner, R. S.(22.3)	Tennyson, S.(19.2)	Scalise, J. M.(20.0)
24	Vishny, R. W.(517.2)	Esty, B. C.(17.6)	Hubbard, R. G.(100.6)	Wilcox, J. A.(31.9)	Zi, H.(6.8)
25	Brown, D. T.(30.4)	Rau, P. R.(6.0)	Jones, S. L.(17.5)	Humphrey, D. B.(185.1)	Tennyson, S.(19.2)
26	Zenner, M.(43.5)	StrÖmberg, P.(1.0)	Cao, C. Q.(63.7)	Kane, E. J.(150.9)	Yamada, T.(2.0)
27	Udell, G. F.(65.6)	Haushalter, D.(3.2)	Welch, I.(233.6)	Sundaram, R. K.(34.7)	Kim, Y. C.(37.9)
28	James, C. M.(242.0)	Hanka, G.(2.2)	Udell, G. F.(65.6)	Houston, J. F.(37.2)	Davies, S. M.(8.3)
29	Calomiris, C. W.(48.0)	Naranjo, A.(10.8)	Calomiris, C. W.(48.0)	Acharya, V. V.(1.0)	Demsetz, R. S.(18.4)
30	Mikkelson, W. H.(346.7)	Nimalendran, M.(38.6)	Mehran, H.(46.1)	Weston, J. P.(12.0)	Berger, P. G.(89.8)

Notes: Table ranks researchers based on various measures derived from publications in six financial economics journals published between 1998 and 2000. "Thanks" is the number of publications in this period that acknowledge the researcher for feedback, unless he was managing editor of that publication during the 1998-2000 period. See section 2 for variable definition.

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Table A7: Ranking according to different centrality measures in the co-author and commenter networks for 2001, ranks 1 through 30.

	Network of informal collaboration			Co-author network	
	Thanks	Eigenvector centrality	Betweenness centrality	Eigenvector centrality	Betweenness centrality
1	Stulz, R. M.(463.8)	Graham, J. R.(51.4)	Stulz, R. M.(463.8)	Stulz, R. M.(463.8)	Stulz, R. M.(463.8)
2	Ritter, J. R.(435.4)	Brav, A.(70.6)	Berger, A. N.(283.7)	Pinkowitz, L. F.(10.0)	Yermack, D. L.(99.2)
3	Shleifer, A.(664.5)	Metrick, A.(31.5)	Shleifer, A.(664.5)	Williamson, R.(10.0)	Shivdasani, A.(104.0)
4	Titman, S. D.(371.8)	Wurgler, J.(10.2)	Ritter, J. R.(435.4)	Opler, T. C.(60.1)	Kang, J.(61.6)
5	Ferson, W. E.(168.3)	Veronesi, P.(5.8)	Netter, J. M.(52.0)	Choe, H. J.(52.6)	Sundaram, R. K.(36.6)
6	Petersen, M. A.(190.1)	Harvey, C. R.(241.4)	Flannery, M. J.(180.9)	Kang, J.(61.6)	Saunders, A.(111.2)
7	Flannery, M. J.(180.9)	Brown, G. W.(3.2)	Rajan, R. G.(264.5)	Kho, B.(19.5)	John, K.(218.9)
8	Stein, J. C.(251.0)	Ritter, J. R.(435.4)	Ferson, W. E.(168.3)	Kim, Y. C.(46.1)	Choe, H. J.(52.6)
9	Rajan, R. G.(264.5)	Hansen, R. S.(35.2)	Mayer, C. P.(131.4)	Griffin, J. M.(19.0)	Cao, C. Q.(83.2)
10	Allen, F.(156.8)	Habib, M. A.(3.3)	Campbell, J. Y.(393.0)	Cao, C. Q.(83.2)	Altman, E. I.(555.2)
11	Brennan, M. J.(307.7)	Stulz, R. M.(463.8)	Titman, S. D.(371.8)	Ahn, H.(26.0)	Bakshi, G. S.(59.2)
12	Jagannathan, R.(246.4)	Lynch, A. W.(15.8)	Cao, C. Q.(83.2)	Shivdasani, A.(104.0)	Aggarwal, R.(37.9)
13	Madhavan, A. N.(151.7)	Barber, B. M.(131.7)	Harvey, C. R.(241.4)	Yamada, T.(3.2)	Madan, D. B.(31.9)
14	Zingales, L.(125.5)	Viceira, L. M.(18.7)	Spindt, P. A.(91.7)	Hatheway, F. M.(13.4)	Ghysels, E.(120.7)
15	Campbell, J. Y.(393.0)	Hirshleifer, D.(235.8)	Saunders, A.(111.2)	Ghysels, E.(120.7)	Ofek, E.(141.7)
16	Amihud, Y.(433.4)	Wermers, R.(41.5)	Hubbard, R. G.(127.6)	Bakshi, G. S.(59.2)	Puri, M.(35.2)
17	Schwert, G. W.(757.2)	Coles, J. L.(105.7)	Megginson, W. L. B.(129.2)	Chen, Z.(61.4)	Geman, H.(48.3)
18	O'Hara, M.(215.8)	Williamson, R.(10.0)	Vishny, R. W.(620.2)	Yermack, D. L.(99.2)	Hatheway, F. M.(13.4)
19	Fama, E. F.(1054.2)	Campbell, J. Y.(393.0)	Zingales, L.(125.5)	Peyer, U. C.(0.0)	Caprio, G.(25.1)
20	Berger, A. N.(283.7)	Goldreich, D.(0.0)	Kashyap, A. K.(138.8)	Madan, D. B.(31.9)	Opler, T. C.(60.1)
21	Zenner, M.(51.3)	Cornelli, F.(7.1)	Kane, E. J.(155.5)	Sundaram, R. K.(36.6)	Brenner, M.(67.7)
22	Thakor, A. V.(205.3)	Lamont, O. A.(71.9)	Demsetz, R. S.(35.0)	Ciccotello, C. S.(3.6)	Angel, J. J.(29.4)
23	Saunders, A.(111.2)	Pástor, Ľ.(11.9)	Viswanathan, S.(98.6)	Chernov, M.(7.0)	Berger, P. G.(117.8)
24	Karolyi, G. A.(195.3)	Womack, K. L.(87.9)	Jones, S. L.(24.2)	Brenner, M.(67.7)	Chernov, M.(7.0)
25	Harvey, C. R.(241.4)	Eckbo, B. E.(187.1)	Dumas, B.(281.0)	Ofek, E.(141.7)	Wilson, B. K.(10.5)
26	Constantinides, G. M.(165.7)	Berk, J. B.(13.5)	John, K.(218.9)	Saunders, A.(111.2)	Pinkowitz, L. F.(10.0)
27	French, K. R.(1003.3)	Gompers, P. A.(89.8)	Spatt, C. S.(69.5)	John, K.(218.9)	Singer, H. J.(1.4)
28	Duffie, J. D.(144.6)	StrÖmberg, P.(2.0)	Lettau, M.(19.0)	Acharya, V. V.(4.0)	Ahn, H.(26.0)
29	Green, R. C.(88.2)	Puri, M.(35.2)	Goldstein, R. S.(5.5)	Geman, H.(48.3)	Ané, T.(8.1)
30	Hirshleifer, D.(235.8)	Xia, Y.(3.6)	Strahan, P. E.(49.6)	Carr, P. P.(41.6)	Acharya, V. V.(4.0)

Notes: Table ranks researchers based on various measures derived from publications in six financial economics journals published between 1999 and 2001. "Thanks" is the number of publications in this period that acknowledge the researcher for feedback, unless he was managing editor of that publication during the 1999-2001 period. See section 2 for variable definition.

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Table A8: Ranking according to different centrality measures in the co-author and commenter networks for 2002, ranks 1 through 30.

	Network of informal collaboration			Co-author network	
	Thanks	Eigenvector centrality	Betweenness centrality	Eigenvector centrality	Betweenness centrality
1	Stulz, R. M.(510.7)	Brav, A.(88.4)	Stulz, R. M.(510.7)	Stein, J. C.(297.9)	Bekaert, G.(211.6)
2	Shleifer, A.(811.6)	Graham, J. R.(72.9)	Berger, A. N.(347.5)	Hong, H.(55.3)	Wang, J.(101.6)
3	Ritter, J. R.(497.6)	Heaton, J. C.(101.0)	Flannery, M. J.(197.2)	Chen, J.(3.6)	Chen, J.(3.6)
4	Titman, S. D.(430.1)	Vuolteenaho, T.(1.4)	Kashyap, A. K.(159.8)	Wang, J.(101.6)	Ang, A.(5.1)
5	Stein, J. C.(297.9)	Wurgler, J.(24.8)	Rajan, R. G.(325.4)	Lim, T.(27.2)	Hong, H.(55.3)
6	Ferson, W. E.(189.4)	Constantinides, G. M.(185.5)	Shleifer, A.(811.6)	Michaely, R.(109.3)	Harvey, C. R.(289.0)
7	Flannery, M. J.(197.2)	Henry, P. B.(29.2)	Kane, E. J.(160.8)	Rajan, R. G.(325.4)	Graham, J. R.(72.9)
8	Rajan, R. G.(325.4)	Lamont, O. A.(90.7)	Gromb, D.(45.4)	Kashyap, A. K.(159.8)	Lemmon, M. L.(30.0)
9	Green, R. C.(97.0)	Ritter, J. R.(497.6)	Smith, S. D.(18.1)	Scharfstein, D. S.(305.3)	Michaely, R.(109.3)
10	Jagannathan, R.(310.7)	Harvey, C. R.(289.0)	Harvey, C. R.(289.0)	O'Hara, M.(256.2)	Stein, J. C.(297.9)
11	Zingales, L.(174.7)	Baker, M. P.(11.7)	Campbell, J. Y.(441.3)	Lo, A.(205.3)	Lumsdaine, R. L.(219.5)
12	Petersen, M. A.(225.3)	Brown, G. W.(5.3)	Mayer, C. P.(141.5)	Ellis, K.(26.0)	Lo, A.(205.3)
13	Campbell, J. Y.(441.3)	Cornelli, F.(9.9)	Titman, S. D.(430.1)	Ang, A.(5.1)	O'Hara, M.(256.2)
14	Fama, E. F.(1203.3)	Gompers, P. A.(113.2)	Lemmon, M. L.(30.0)	Saar, G.(4.1)	Lim, T.(27.2)
15	Daniel, K. D.(152.9)	Avramov, D.(1.0)	Jagannathan, R.(310.7)	Llorente, G.(1.0)	Rajan, R. G.(325.4)
16	Schwert, G. W.(828.5)	Lynch, A. W.(24.8)	Ferson, W. E.(189.4)	Mamaysky, H.(10.0)	Griffin, J. M.(22.2)
17	Allen, F.(178.6)	Campbell, J. Y.(441.3)	Claessens, S.(75.7)	Servaes, H.(260.4)	Mamaysky, H.(10.0)
18	O'Hara, M.(256.2)	Pástor, Ľ.(19.9)	Ritter, J. R.(497.6)	Zingales, L.(174.7)	Stulz, R. M.(510.7)
19	Duffie, J. D.(182.1)	Goldreich, D.(5.0)	Heaton, J. C.(101.0)	Grullon, G.(1.0)	Coles, J. L.(118.4)
20	Heaton, J. C.(101.0)	Hirshleifer, D.(283.7)	Masulis, R. W.(522.4)	Koski, J. L.(21.9)	MacKinlay, A. C.(176.2)
21	Madhavan, A. N.(175.1)	Zingales, L.(174.7)	Saunders, A.(125.5)	Petersen, M. A.(225.3)	Scharfstein, D. S.(305.3)
22	Harvey, C. R.(289.0)	Loughran, T.(243.3)	Telmer, C. I.(63.2)	Diamond, D. W.(781.0)	Pástor, Ľ.(19.9)
23	Amihud, Y.(474.4)	Habib, M. A.(9.7)	Ljungqvist, A. P.(9.9)	Gertner, R. H.(119.2)	Walkling, R. A.(246.2)
24	Singleton, K. J.(553.2)	Hansen, R. S.(39.2)	John, K.(244.4)	Powers, E. A.(1.0)	Siddique, A. R.(15.7)
25	Stambaugh, R. F.(574.6)	Kogan, L.(6.2)	Petersen, M. A.(225.3)	MacKinlay, A. C.(176.2)	Hodrick, R. J.(265.7)
26	Servaes, H.(260.4)	Vayanos, D.(8.1)	Vishny, R. W.(754.7)	Easley, D. A.(0.0)	Grullon, G.(1.0)
27	Bessembinder, H.(101.6)	Venkataraman, K.(0.0)	Brandt, M. W.(22.5)	Hvidkjaer, S.(2.0)	Bloomfield, R. J.(43.3)
28	Constantinides, G. M.(185.5)	Hellmann, T. F.(32.9)	Noe, T. H.(31.6)	Zhang, J.(1.0)	Rees, L. L.(15.6)
29	Thaler, R. H.(717.1)	Géczy, C. C.(76.2)	Andersen, T. G.(151.9)	Kogan, L.(6.2)	Diamond, D. W.(781.0)
30	Cochrane, J. H.(160.2)	Cohen, R. B.(1.0)	Puri, M.(52.5)	Bertsimas, D. J.(80.8)	Zhang, J.(1.0)

Notes: Table ranks researchers based on various measures derived from publications in six financial economics journals published between 2000 and 2002. "Thanks" is the number of publications in this period that acknowledge the researcher for feedback, unless he was managing editor of that publication during the 2000-2002 period. See section 2 for variable definition.

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Table A9: Ranking according to different centrality measures in the co-author and commenter networks for 2003, ranks 1 through 30.

	Network of informal collaboration			Co-author network	
	Thanks	Eigenvector centrality	Betweenness centrality	Eigenvector centrality	Betweenness centrality
1	Stulz, R. M.(591.0)	Vuolteenaho, T.(7.8)	Stulz, R. M.(591.0)	Stein, J. C.(368.6)	Graham, J. R.(105.3)
2	Shleifer, A.(1074.8)	Graham, J. R.(105.3)	Kashyap, A. K.(197.9)	Hong, H.(89.9)	Lemmon, M. L.(41.4)
3	Titman, S. D.(515.6)	Brav, A.(114.1)	Berger, A. N.(400.7)	Chen, J.(14.9)	Griffin, J. M.(28.4)
4	Ritter, J. R.(578.3)	Griffin, J. M.(28.4)	Ljungqvist, A. P.(26.2)	Kashyap, A. K.(197.9)	Harvey, C. R.(359.6)
5	Stein, J. C.(368.6)	Avramov, D.(2.0)	Klapper, L. F.(15.0)	Rajan, R. G.(423.0)	Bekaert, G.(280.8)
6	Green, R. C.(112.2)	Gompers, P. A.(149.1)	Smith, D. C.(27.2)	Kubik, J. D.(23.1)	Ang, A.(12.3)
7	Jagannathan, R.(386.9)	Aggarwal, R.(59.3)	Claessens, S.(116.9)	Ang, A.(12.3)	Chen, J.(14.9)
8	Fama, E. F.(1407.9)	Brown, G. W.(10.1)	Campbell, J. Y.(505.7)	Mojon, B.(7.2)	Michaely, R.(142.9)
9	Daniel, K. D.(210.1)	Pástor, Ľ.(29.1)	Titman, S. D.(515.6)	Terlizzese, D.(72.7)	Stulz, R. M.(591.0)
10	Schwert, G. W.(911.5)	Hansen, R. S.(43.4)	Ongena, S.(22.4)	Angeloni, I.(11.7)	Stein, J. C.(368.6)
11	Campbell, J. Y.(505.7)	Martin, J. S.(23.7)	Christiano, L. J.(234.6)	Zingales, L.(265.1)	Kashyap, A. K.(197.9)
12	O'Hara, M.(297.4)	Moskowitz, T. J.(56.7)	Graham, J. R.(105.3)	Petersen, M. A.(275.2)	Harris, J. H.(90.9)
13	Zingales, L.(265.1)	Williamson, R.(24.4)	Shleifer, A.(1074.8)	Bekaert, G.(280.8)	Martin, J. S.(23.7)
14	Ferson, W. E.(209.8)	Cornelli, F.(18.9)	Jennings, R. H.(81.7)	Smets, F. R.(35.8)	O'Hara, M.(297.4)
15	Rajan, R. G.(423.0)	Baker, M. P.(27.4)	Lemmon, M. L.(41.4)	Vermeulen, P.(2.2)	Bae, K. H.(33.5)
16	Brennan, M. J.(368.5)	Jones, C. S.(6.5)	Gromb, D.(65.7)	Harvey, C. R.(359.6)	Linck, J. S.(14.0)
17	Berger, A. N.(400.7)	Lamont, O. A.(115.5)	Hasan, I.(27.3)	Lumsdaine, R. L.(250.7)	Rajan, R. G.(423.0)
18	Amihud, Y.(532.9)	Ljungqvist, A. P.(26.2)	Smets, F. R.(35.8)	Hodrick, R. J.(305.8)	Mojon, B.(7.2)
19	Bessembinder, H.(120.4)	Shleifer, A.(1074.8)	Smith, S. D.(19.2)	Graham, J. R.(105.3)	Hodrick, R. J.(305.8)
20	Duffie, J. D.(238.8)	Wilhelm, W. J.(73.9)	Zingales, L.(265.1)	Zhang, X.(3.0)	Grullon, G.(7.1)
21	Sofianos, G.(75.6)	Venkataraman, K.(3.0)	Starks, L. T.(142.4)	Lemmon, M. L.(41.4)	Hong, H.(89.9)
22	Dumas, B.(342.6)	Lynch, A. W.(41.2)	Jagannathan, R.(386.9)	Michaely, R.(142.9)	Williamson, R.(24.4)
23	Petersen, M. A.(275.2)	Goldreich, D.(13.0)	DeYoung, R. E.(71.5)	Wolf, J. G.(17.0)	Smith, C. W.(814.0)
24	Jennings, R. H.(81.7)	Poteshman, A. M.(5.0)	Flannery, M. J.(218.1)	Roberts, M. R.(1.0)	Brickley, J. A.(335.6)
25	Singleton, K. J.(585.4)	Constantinides, G. M.(204.4)	Amihud, Y.(532.9)	Rogers, D. A.(7.3)	Lim, C.(4.0)
26	Hasbrouck, J.(213.8)	Santa-Clara, P.(25.0)	Aggarwal, R. K.(52.6)	Linck, J. S.(14.0)	Kim, J.(5.0)
27	Heaton, J. C.(127.5)	Hirshleifer, D.(358.4)	Ferson, W. E.(209.8)	Rees, L. L.(18.1)	Kang, J.(112.1)
28	Harvey, C. R.(359.6)	Heaton, J. C.(127.5)	Benston, G. J.(188.0)	Hertzel, M. G.(55.7)	Zimmerman, J. L.(123.0)
29	French, K. R.(1372.4)	Polk, C.(15.3)	Telmer, C. I.(72.0)	Wang, J.(118.6)	Kubik, J. D.(23.1)
30	Flannery, M. J.(218.1)	Kapadia, N.(6.4)	Mayer, C. P.(162.0)	Saar, G.(8.4)	Macey, J. R.(148.6)

Notes: Table ranks researchers based on various measures derived from publications in six financial economics journals published between 2001 and 2003. "Thanks" is the number of publications in this period that acknowledge the researcher for feedback, unless he was managing editor of that publication during the 2001-2003 period. See section 2 for variable definition.

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Table A10: Ranking according to different centrality measures in the co-author and commenter networks for 2004, ranks 1 through 30.

	Network of informal collaboration			Co-author network	
	Thanks	Eigenvector centrality	Betweenness centrality	Eigenvector centrality	Betweenness centrality
1	Green, R. C.(121.5)	Baker, M. P.(38.1)	Stulz, R. M.(654.9)	Liu, J.(8.7)	Lemmon, M. L.(59.5)
2	Stulz, R. M.(654.9)	Wurgler, J.(70.0)	Kashyap, A. K.(222.3)	Longstaff, F. A.(389.8)	Lins, K. V.(48.8)
3	Ritter, J. R.(668.8)	Shleifer, A.(1363.2)	Berger, A. N.(483.0)	Pan, J.(107.6)	Harvey, C. R.(425.3)
4	Shleifer, A.(1363.2)	Vuolteenaho, T.(16.1)	Titman, S. D.(604.9)	Kahl, M.(1.0)	Bekaert, G.(342.2)
5	Stein, J. C.(433.1)	Avramov, D.(5.1)	Shleifer, A.(1363.2)	Ang, A.(27.7)	Graham, J. R.(139.7)
6	Titman, S. D.(604.9)	Gompers, P. A.(195.5)	Benston, G. J.(204.6)	Bekaert, G.(342.2)	Ang, A.(27.7)
7	Fama, E. F.(1625.3)	Brav, A.(146.5)	Smith, S. D.(19.3)	Stein, J. C.(433.1)	Chen, J.(25.0)
8	Schwert, G. W.(992.8)	Sapienza, P.(12.1)	Graham, J. R.(139.7)	Hong, H.(136.6)	Michaely, R.(167.1)
9	Jagannathan, R.(470.4)	Henry, P. B.(97.7)	Ritter, J. R.(668.8)	Wang, A. W.(2.0)	Stein, J. C.(433.1)
10	Zingales, L.(358.5)	Vishny, R. W.(1272.4)	Zingales, L.(358.5)	Piazzesi, M.(7.1)	Griffin, J. M.(44.3)
11	Daniel, K. D.(265.7)	Graham, J. R.(139.7)	Flannery, M. J.(238.3)	Chen, J.(25.0)	Liu, J.(8.7)
12	Cochrane, J. H.(239.6)	Mitton, T.(27.0)	Claessens, S.(152.4)	Kubik, J. D.(30.1)	Harris, J. H.(104.0)
13	Campbell, J. Y.(572.4)	Griffin, J. M.(44.3)	Ljungqvist, A. P.(42.2)	Kashyap, A. K.(222.3)	Kashyap, A. K.(222.3)
14	Ferson, W. E.(227.5)	Moskowitz, T. J.(86.5)	Hasan, I.(37.9)	Harvey, C. R.(425.3)	Kahl, M.(1.0)
15	Harvey, C. R.(425.3)	Levine, R. L.(1143.0)	Giammarino, R. M.(41.0)	Rajan, R. G.(538.8)	Longstaff, F. A.(389.8)
16	Hadlock, C. J.(27.0)	Liu, J.(8.7)	Ongena, S.(33.3)	Lumsdaine, R. L.(280.9)	O'Hara, M.(345.2)
17	Berger, A. N.(483.0)	D'Avolio, G.(22.0)	Starks, L. T.(155.9)	Brennan, M. J.(400.0)	Rajan, R. G.(538.8)
18	Duffie, J. D.(308.0)	Stulz, R. M.(654.9)	Smith, D. C.(38.1)	Xia, Y.(21.5)	Linck, J. S.(18.2)
19	Thakor, A. V.(275.2)	Lerner, J.(159.9)	Lemmon, M. L.(59.5)	Mojon, B.(8.0)	Grullon, G.(16.1)
20	French, K. R.(1597.6)	Longstaff, F. A.(389.8)	Goodhart, C. A.(162.6)	Angeloni, I.(13.7)	Wang, A. W.(2.0)
21	Scharfstein, D. S.(425.4)	Heaton, J. C.(153.6)	Levine, R. L.(1143.0)	Terlizzese, D.(84.5)	Mojon, B.(8.0)
22	Bessembinder, H.(144.8)	Hellmann, T. F.(95.7)	Karolyi, G. A.(328.0)	Lins, K. V.(48.8)	Fishe, R. P.(62.7)
23	Flannery, M. J.(238.3)	Campello, M.(3.0)	Megginson, W. L. B.(284.1)	Roper, A. H.(2.0)	Kanatas, G.(51.7)
24	Lamont, O. A.(138.8)	Schenone, C.(0.0)	Weisbach, M. S.(502.6)	Zingales, L.(358.5)	Zingales, L.(358.5)
25	Brennan, M. J.(400.0)	Pan, J.(107.6)	Mester, L. J.(232.5)	Petersen, M. A.(341.3)	Bessembinder, H.(144.8)
26	O'Hara, M.(345.2)	Teo, M.(0.0)	Gromb, D.(82.6)	Lemmon, M. L.(59.5)	Hvidkjaer, S.(17.0)
27	Hong, H.(136.6)	Santa-Clara, P.(32.6)	Michaely, R.(167.1)	Vermeulen, P.(2.2)	Smith, C. W.(872.4)
28	Rajan, R. G.(538.8)	Pástor, Ľ.(38.7)	Duffie, J. D.(308.0)	Smets, F. R.(48.1)	Brickley, J. A.(363.1)
29	Phillips, G. M.(64.8)	Lewellen, J.(19.9)	Hong, H.(136.6)	Linck, J. S.(18.2)	Christie, W. G.(202.0)
30	Jennings, R. H.(85.7)	Swaminathan, B.(96.6)	Kaufman, G. G.(91.8)	Graham, J. R.(139.7)	Lipson, M. L.(47.7)

Notes: Table ranks researchers based on various measures derived from publications in six financial economics journals published between 2002 and 2004. "Thanks" is the number of publications in this period that acknowledge the researcher for feedback, unless he was managing editor of that publication during the 2002-2004 period. See section 2 for variable definition.

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Table A11: Ranking according to different centrality measures in the co-author and commenter networks for 2005, ranks 1 through 30.

	Network of informal collaboration			Co-author network	
	Thanks	Eigenvector centrality	Betweenness centrality	Eigenvector centrality	Betweenness centrality
1	Green, R. C.(142.8)	Stulz, R. M.(752.0)	Berger, A. N.(554.8)	Liu, J.(16.1)	Harvey, C. R.(508.6)
2	Ritter, J. R.(769.4)	Jenter, D.(2.2)	Stulz, R. M.(752.0)	Longstaff, F. A.(450.1)	Lundblad, C. T.(27.8)
3	Shleifer, A.(1769.9)	Moskowitz, T. J.(124.4)	Smith, D. C.(55.6)	Pan, J.(148.0)	Conrad, J. S.(160.7)
4	Stein, J. C.(523.7)	Wurgler, J.(102.8)	Stein, J. C.(523.7)	Bekaert, G.(417.1)	Dittmar, R. F.(81.5)
5	Stulz, R. M.(752.0)	Baker, M. P.(67.9)	Harvey, C. R.(508.6)	Ang, A.(51.8)	Cooper, M. J.(32.4)
6	Campbell, J. Y.(663.9)	Greenwood, R. M.(5.0)	Ongena, S.(49.8)	Wang, T.(32.4)	Lemmon, M. L.(76.8)
7	Fama, E. F.(1882.4)	Nagel, S.(9.4)	Kashyap, A. K.(249.5)	Kahl, M.(7.1)	Lins, K. V.(64.5)
8	Titman, S. D.(716.3)	Shleifer, A.(1769.9)	Shleifer, A.(1769.9)	Neis, E.(0.0)	Bekaert, G.(417.1)
9	Schwert, G. W.(1074.7)	Liu, J.(16.1)	Goodhart, C. A.(186.0)	Mithal, S.(0.0)	Liu, J.(16.1)
10	Jagannathan, R.(592.8)	Almeida, H. V.(3.0)	Graham, J. R.(193.3)	Wang, A. W.(4.1)	Hameed, A.(57.7)
11	Brennan, M. J.(447.2)	Santa-Clara, P.(46.4)	Ritter, J. R.(769.4)	Piazzesi, M.(14.5)	Cooney, J. W.(52.4)
12	Berger, A. N.(554.8)	Longstaff, F. A.(450.1)	Rajan, R. G.(672.2)	Harvey, C. R.(508.6)	Wang, T.(32.4)
13	Cochrane, J. H.(295.8)	Ou-Yang, H.(4.0)	Karolyi, G. A.(375.7)	Lundblad, C. T.(27.8)	Sias, R. W.(77.6)
14	Flannery, M. J.(258.0)	Naik, N. Y.(58.6)	Laeven, L.(27.4)	Cao, H. H.(85.0)	Lau, S. T.(32.8)
15	Uppal, R.(93.6)	Valkanov, R. I.(11.5)	Hasan, I.(47.6)	Zhang, H. H.(33.9)	H. McInish, T.(276.1)
16	Hasbrouck, J.(283.2)	Sarkissian, S.(16.3)	Flannery, M. J.(258.0)	Uppal, R.(93.6)	Chan, K.(95.1)
17	Zingales, L.(470.1)	Graham, J. R.(193.3)	Megginson, W. L. B.(378.0)	Brennan, M. J.(447.2)	Chung, K. H.(87.9)
18	Harvey, C. R.(508.6)	Pástor, Ľ.(54.3)	Ljungqvist, A. P.(65.3)	Graham, J. R.(193.3)	Brav, A.(185.2)
19	Wurgler, J.(102.8)	Acharya, V. V.(20.3)	Weston, J. P.(67.3)	Michaely, R.(203.7)	Cao, H. H.(85.0)
20	Hadlock, C. J.(35.9)	Pedersen, L. H.(20.9)	Titman, S. D.(716.3)	Brav, A.(185.2)	Michaely, R.(203.7)
21	Kaplan, S. N.(389.2)	Durnev, A. A.(9.8)	Mester, L. J.(269.0)	Xia, Y.(37.2)	Bae, K. H.(54.2)
22	Duffie, J. D.(387.5)	Campello, M.(7.5)	Zingales, L.(470.1)	Xu, X.(65.6)	Schallheim, J. S.(103.0)
23	Kyle, A. S.(150.6)	Vishny, R. W.(1650.4)	Brennan, M. J.(447.2)	Strong, N. C.(74.1)	Kato, H. K.(73.1)
24	Gromb, D.(101.3)	Siegel, J. I.(3.0)	Klapper, L. F.(40.7)	Lins, K. V.(64.5)	Gompers, P. A.(249.2)
25	Thakor, A. V.(301.6)	Griffin, J. M.(61.8)	Rogers, J. H.(172.8)	Roper, A. H.(6.0)	Gulen, H.(10.0)
26	Ljungqvist, A. P.(65.3)	Yadav, P. K.(62.3)	Green, R. C.(142.8)	Dittmar, R. F.(81.5)	Parrino, R.(87.8)
27	Diamond, D. W.(1125.9)	Schultz, P. H.(240.8)	Spindt, P. A.(191.7)	Bansal, R.(70.1)	Starks, L. T.(178.6)
28	French, K. R.(1855.1)	Gompers, P. A.(249.2)	Udell, G. F.(172.6)	Roberts, M. R.(7.3)	Stulz, R. M.(752.0)
29	Hirshleifer, D.(561.0)	Malloy, C. J.(34.0)	Michaely, R.(203.7)	Dammon, R. M.(63.2)	Lerner, J.(209.9)
30	Amihud, Y.(660.0)	Bekaert, G.(417.1)	Musto, D. K.(38.8)	Spatt, C. S.(133.6)	Xu, X.(65.6)

Notes: Table ranks researchers based on various measures derived from publications in six financial economics journals published between 2003 and 2005. "Thanks" is the number of publications in this period that acknowledge the researcher for feedback, unless he was managing editor of that publication during the 2003-2005 period. See section 2 for variable definition.

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Table A12: Ranking according to different centrality measures in the co-author and commenter networks for 2006, ranks 1 through 30.

	Network of informal collaboration			Co-author network	
	Thanks	Eigenvector centrality	Betweenness centrality	Eigenvector centrality	Betweenness centrality
1	Stein, J. C.(629.3)	Stulz, R. M.(849.0)	Berger, A. N.(642.0)	Demirgüç-Kunt, A.(266.7)	Berger, A. N.(642.0)
2	Green, R. C.(163.6)	Jenter, D.(5.7)	Shleifer, A.(2235.9)	Beck, T.(320.9)	Cull, R. J.(46.3)
3	Ritter, J. R.(899.7)	Rauh, J. D.(5.0)	Stulz, R. M.(849.0)	Maksimovic, V.(206.9)	Bonaccorsi di Patti, E.(12.6)
4	Shleifer, A.(2235.9)	Jin, L.(27.2)	Harvey, C. R.(599.9)	Levine, R. L.(1540.3)	Dell'Ariccia, G.(43.6)
5	Stulz, R. M.(849.0)	Nagel, S.(19.1)	Rajan, R. G.(814.6)	Berger, A. N.(642.0)	Klapper, L. F.(57.7)
6	Campbell, J. Y.(772.3)	Veronesi, P.(80.4)	Stein, J. C.(629.3)	Cull, R. J.(46.3)	Stein, J. C.(629.3)
7	Schwert, G. W.(1173.9)	Simonov, A.(5.2)	Karolyi, G. A.(428.8)	Clarke, G. R.(135.0)	Hong, H.(259.2)
8	Titman, S. D.(849.7)	Moskowitz, T. J.(155.1)	Weston, J. P.(79.9)	Udell, G. F.(216.4)	Rajan, R. G.(814.6)
9	Zingales, L.(604.6)	Wurgler, J.(143.0)	Graham, J. R.(258.8)	Haubrich, J. G.(42.7)	Clarke, G. R.(135.0)
10	Fama, E. F.(2229.8)	Pástor, Ľ.(89.9)	Flannery, M. J.(284.0)	Miller, N. H.(15.0)	Demirgüç-Kunt, A.(266.7)
11	Wurgler, J.(143.0)	Wachter, J. A.(30.2)	Laeven, L.(42.0)	Laeven, L.(42.0)	Haubrich, J. G.(42.7)
12	Cochrane, J. H.(354.2)	Almeida, H. V.(15.1)	Goodhart, C. A.(204.4)	Love, I.(39.9)	Martínez Pería, M. S.(72.9)
13	Kaplan, S. N.(454.4)	Baker, M. P.(98.8)	Ljungqvist, A. P.(104.6)	Klapper, L. F.(57.7)	Laeven, L.(42.0)
14	Jagannathan, R.(730.2)	Chordia, T.(154.0)	Megginson, W. L. B.(468.5)	Crivelli, J. M.(7.1)	Levine, R. L.(1540.3)
15	Thakor, A. V.(334.0)	Massa, M.(14.5)	Campbell, J. Y.(772.3)	Frame, W. S.(31.8)	Petersen, M. A.(481.6)
16	Harvey, C. R.(599.9)	Liu, J.(26.4)	Hirshleifer, D.(689.1)	Jerome, A. T.(13.9)	Santos, J. A.(27.3)
17	Ferson, W. E.(271.1)	Avramov, D.(29.2)	Titman, S. D.(849.7)	Rajan, R. G.(814.6)	Mody, A.(276.2)
18	Berger, A. N.(642.0)	Hvidkjaer, S.(60.0)	Green, R. C.(163.6)	Summerhill, W. R.(8.1)	Love, I.(39.9)
19	French, K. R.(2203.0)	Mian, A. R.(8.8)	Levine, R. L.(1540.3)	Stein, J. C.(629.3)	Marquez, R.(37.1)
20	Daniel, K. D.(426.9)	Ang, A.(93.9)	Miller, N. H.(15.0)	Petersen, M. A.(481.6)	Rumble, A. S.(1.0)
21	Pástor, Ľ.(89.9)	Kedia, S.(75.3)	Gomes, F. J.(15.5)	Espinosa-Vega, M. A.(13.3)	Faulkender, M.(5.9)
22	Flannery, M. J.(284.0)	Ou-Yang, H.(10.1)	Smith, D. C.(64.1)	Martínez Pería, M. S.(72.9)	Xiong, W.(49.8)
23	Vuolteenaho, T.(48.1)	Pedersen, L. H.(38.3)	Hong, H.(259.2)	Sánchez, S. M.(10.0)	Espinosa-Vega, M. A.(13.3)
24	Brennan, M. J.(490.8)	Faulkender, M.(5.9)	Wachtel, P. A.(158.8)	Barth, J. R.(100.2)	Crivelli, J. M.(7.1)
25	Amihud, Y.(739.6)	Xing, Y.(24.3)	Tufano, P.(234.2)	Caprio, G.(78.9)	Beck, T.(320.9)
26	Karolyi, G. A.(428.8)	Yermack, D. L.(402.3)	Petersen, M. A.(481.6)	Shirley, M. M.(49.1)	Miller, N. H.(15.0)
27	Gromb, D.(131.0)	Hou, K.(7.3)	Ongena, S.(58.7)	Bonaccorsi di Patti, E.(12.6)	Maksimovic, V.(206.9)
28	Scharfstein, D. S.(581.3)	Longstaff, F. A.(519.3)	Kashyap, A. K.(284.4)	DeYoung, R. E.(127.3)	Udell, G. F.(216.4)
29	Stambaugh, R. F.(839.2)	Zhang, L.(22.7)	Weisbach, M. S.(653.2)	Rosenthal, J. L.(22.4)	Shirley, M. M.(49.1)
30	Uppal, R.(115.5)	Wang, Z.(216.3)	Welch, I.(716.0)	Davis, L. E.(100.6)	Sánchez, S. M.(10.0)

Notes: Table ranks researchers based on various measures derived from publications in six financial economics journals published between 2004 and 2006. "Thanks" is the number of publications in this period that acknowledge the researcher for feedback, unless he was managing editor of that publication during the 2004-2006 period. See section 2 for variable definition.

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Table A13: Ranking according to different centrality measures in the co-author and commenter networks for 2007, ranks 1 through 30.

	Network of informal collaboration			Co-author network	
	Thanks	Eigenvector centrality	Betweenness centrality	Eigenvector centrality	Betweenness centrality
1	Stein, J. C.(735.3)	Jenter, D.(13.9)	Berger, A. N.(735.6)	Berger, A. N.(735.6)	Stein, J. C.(735.3)
2	Shleifer, A.(2788.2)	Stulz, R. M.(971.3)	Shleifer, A.(2788.2)	Cull, R. J.(58.5)	Thakor, A. V.(370.6)
3	Ritter, J. R.(1040.9)	Rauh, J. D.(10.8)	Stulz, R. M.(971.3)	Clarke, G. R.(189.2)	Coval, J. D.(145.1)
4	Campbell, J. Y.(871.6)	Hou, K.(15.4)	Stein, J. C.(735.3)	Udell, G. F.(275.2)	Hong, H.(326.6)
5	Stulz, R. M.(971.3)	Jin, L.(35.9)	Harvey, C. R.(707.2)	Beck, T.(411.6)	Berger, A. N.(735.6)
6	Titman, S. D.(997.1)	Veronesi, P.(99.8)	Hartmann, P.(50.4)	Miller, N. H.(38.1)	Valkanov, R. I.(51.0)
7	Wurgler, J.(188.9)	Malloy, C. J.(85.7)	Ongena, S.(76.5)	Demirgüç-Kunt, A.(336.0)	Santa-Clara, P.(101.3)
8	Schwert, G. W.(1273.0)	Gomes, F. J.(27.8)	Titman, S. D.(997.1)	Klapper, L. F.(80.4)	Goyal, A.(73.5)
9	Zingales, L.(755.1)	Almeida, H. V.(36.5)	Smith, D. C.(79.5)	Frame, W. S.(44.2)	Chordia, T.(197.2)
10	Green, R. C.(182.1)	Wachter, J. A.(43.0)	Ljungqvist, A. P.(139.1)	Martínez Pería, M. S.(89.5)	Klapper, L. F.(80.4)
11	Gromb, D.(171.5)	Gan, J.(5.1)	Rajan, R. G.(988.5)	Rajan, R. G.(988.5)	Dittmar, A. K.(61.2)
12	Amihud, Y.(821.1)	Strebulaev, I. A.(7.9)	Laeven, L.(67.6)	Maksimovic, V.(259.5)	Servaes, H.(675.6)
13	Pástor, Ľ.(129.9)	Simonov, A.(9.1)	Bartram, S. M.(13.7)	Stein, J. C.(735.3)	Dahiya, S.(16.5)
14	Stambaugh, R. F.(913.1)	Pástor, Ľ.(129.9)	Kolari, J. W.(42.2)	Dick, A. A.(6.6)	Khorana, A.(58.5)
15	Daniel, K. D.(507.7)	Sufi, A.(4.5)	Petersen, M. A.(576.8)	Crivelli, J. M.(8.1)	Titman, S. D.(997.1)
16	Fama, E. F.(2584.3)	Dittmar, A. K.(61.2)	Henderson, D. W.(187.2)	Petersen, M. A.(576.8)	Gopalan, R.(3.0)
17	Ferson, W. E.(292.6)	Kedia, S.(105.1)	Bekaert, G.(590.5)	Espinosa-Vega, M. A.(16.9)	Rau, P. R.(119.2)
18	Kaplan, S. N.(549.7)	Mahrt-Smith, J.(22.9)	Karolyi, G. A.(484.6)	Sánchez, S. M.(13.4)	Seru, A.(0.0)
19	Berger, A. N.(735.6)	Chordia, T.(197.2)	Duffie, J. D.(592.6)	White, L. J.(95.7)	Acharya, V. V.(44.6)
20	Karolyi, G. A.(484.6)	Acharya, V. V.(44.6)	Hirshleifer, D.(812.8)	Rosen, R. J.(107.0)	Kacperczyk, M.(9.0)
21	Barberis, N. C.(419.8)	Nagel, S.(26.6)	Ritter, J. R.(1040.9)	Shirley, M. M.(58.9)	Zheng, L.(65.7)
22	Flannery, M. J.(311.4)	Yermack, D. L.(517.8)	Degryse, H.(70.9)	Goldberg, L. G.(150.8)	Rajan, R. G.(988.5)
23	French, K. R.(2555.0)	Massa, M.(23.1)	Rigobón, R.(190.1)	Jerome, A. T.(16.6)	Starks, L. T.(236.7)
24	Cochrane, J. H.(423.5)	Mian, A. R.(19.0)	Graham, J. R.(335.1)	Levine, R. L.(1744.7)	Cull, R. J.(58.5)
25	Duffie, J. D.(592.6)	Moskowitz, T. J.(196.3)	Saunders, A.(252.8)	Laeven, L.(67.6)	Yu, J.(1.4)
26	Lamont, O. A.(237.0)	Ang, A.(139.1)	Wachtel, P. A.(170.3)	Rosenthal, J. L.(26.4)	Kubik, J. D.(97.8)
27	Brennan, M. J.(534.7)	Lundblad, C. T.(71.5)	Acharya, V. V.(44.6)	Davis, L. E.(107.7)	Bris, A.(14.5)
28	Moskowitz, T. J.(196.3)	Moeller, S. B.(63.2)	Weston, J. P.(103.7)	Lamoreaux, N. R.(39.5)	Sarkar, A.(30.6)
29	Petersen, M. A.(576.8)	Liu, J.(40.9)	Michaely, R.(302.9)	Aggarwal, R.(140.7)	Huh, S. W.(3.0)
30	McDonald, R. L.(607.8)	Coval, J. D.(145.1)	Goodhart, C. A.(220.7)	DeYoung, R. E.(151.5)	Goetzmann, W. N.(275.8)

Notes: Table ranks researchers based on various measures derived from publications in six financial economics journals published between 2005 and 2007. "Thanks" is the number of publications in this period that acknowledge the researcher for feedback, unless he was managing editor of that publication during the 2005-2007 period. See section 2 for variable definition.

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Table A14: Ranking according to different centrality measures in the co-author and commenter networks for 2008, ranks 1 through 30.

	Network of informal collaboration			Co-author network	
	Thanks	Eigenvector centrality	Betweenness centrality	Eigenvector centrality	Betweenness centrality
1	Stein, J. C.(856.8)	Wachter, J. A.(56.8)	Stulz, R. M.(1099.5)	Demirgüç-Kunt, A.(435.1)	Klapper, L. F.(112.9)
2	Stulz, R. M.(1099.5)	Ang, A.(186.8)	Berger, A. N.(878.5)	Beck, T.(542.7)	Dahiya, S.(23.3)
3	Campbell, J. Y.(1000.5)	Gan, J.(7.4)	Lemmon, M. L.(202.7)	Levine, R. L.(2006.8)	Berger, A. N.(878.5)
4	Amihud, Y.(907.5)	Gomes, F. J.(48.0)	Titman, S. D.(1171.0)	Laeven, L.(109.1)	Laeven, L.(109.1)
5	Titman, S. D.(1171.0)	Stulz, R. M.(1099.5)	Laeven, L.(109.1)	Maksimovic, V.(335.1)	Acharya, V. V.(68.0)
6	Ritter, J. R.(1165.2)	Dittmar, A. K.(84.9)	Ljungqvist, A. P.(166.6)	Martínez Pería, M. S.(109.2)	Saunders, A.(282.1)
7	Shleifer, A.(3471.0)	Campbell, J. Y.(1000.5)	Duffie, J. D.(705.6)	Kane, E. J.(216.2)	Campello, M.(57.0)
8	Zingales, L.(955.0)	Laeven, L.(109.1)	Amihud, Y.(907.5)	Love, I.(89.2)	DeYoung, R. E.(185.9)
9	Schwert, G. W.(1378.3)	Robinson, D. T.(37.1)	Harvey, C. R.(827.3)	Ayyagari, M.(3.5)	Martínez Pería, M. S.(109.2)
10	Wurgler, J.(251.8)	Kedia, S.(137.0)	Krishnamurthy, A.(74.8)	Schmukler, S. L.(107.9)	Bharath, S. T.(18.9)
11	Stambaugh, R. F.(996.0)	Jin, L.(50.0)	Zhang, L.(51.2)	Detragiache, E.(191.4)	Srinivasan, A.(19.3)
12	Ferson, W. E.(322.9)	Strebulaev, I. A.(17.8)	Karolyi, G. A.(543.8)	Tressel, T.(7.1)	Lang, W. W.(116.7)
13	Duffie, J. D.(705.6)	Yogo, M.(173.5)	Lu, Y. K.(19.0)	Caprio, G.(142.4)	Demirgüç-Kunt, A.(435.1)
14	Gromb, D.(204.2)	Liu, J.(61.1)	Ritter, J. R.(1165.2)	Klapper, L. F.(112.9)	Driessen, J.(37.5)
15	Harvey, C. R.(827.3)	Rauh, J. D.(18.1)	Shleifer, A.(3471.0)	Gozzi, J. C.(2.2)	Kane, E. J.(216.2)
16	French, K. R.(2954.1)	Sadka, R.(47.5)	Longstaff, F. A.(675.3)	Rajan, R. G.(1191.6)	Zhang, L.(51.2)
17	Daniel, K. D.(590.1)	Almeida, H. V.(56.8)	Hartmann, P.(58.0)	Nicodème, G.(11.1)	Goldberg, L. G.(168.8)
18	Pástor, L'.(171.1)	Hong, H.(407.1)	French, K. R.(2954.1)	Huizinga, H. P.(184.2)	Dell'Ariccia, G.(72.2)
19	Karolyi, G. A.(543.8)	Cohen, L. H.(2.0)	Degryse, H.(93.1)	Driessen, J.(37.5)	Mester, L. J.(417.5)
20	Brennan, M. J.(588.3)	Tetlock, P. C.(9.8)	Yeung, B. Y.(298.8)	Kroszner, R. S.(197.8)	Cremers, K. J. M.(54.9)
21	O'Hara, M.(589.2)	David, A.(40.3)	Bartram, S. M.(17.0)	Claessens, S.(565.3)	Carbó, S.(16.5)
22	Acharya, V. V.(68.0)	Bali, T. G.(42.1)	Engle, R. F.(1621.0)	Ueda, K.(8.0)	Rajan, R. G.(1191.6)
23	Lamont, O. A.(267.7)	Veronesi, P.(128.8)	Klapper, L. F.(112.9)	De Nicoló, G.(45.3)	Weinbaum, D.(6.5)
24	Petersen, M. A.(677.3)	Mathews, R. D.(5.0)	Rigobón, R.(235.3)	Feijen, E.(1.0)	Levine, R. L.(2006.8)
25	Flannery, M. J.(345.7)	Roberts, M. R.(60.8)	Rajan, R. G.(1191.6)	Klingebiel, D.(122.5)	Almeida, H. V.(56.8)
26	Barberis, N. C.(504.4)	Bekaert, G.(678.9)	de Jong, F.(81.1)	Phillips, G. M.(163.3)	Narayanan, R. P.(10.9)
27	Singleton, K. J.(921.0)	Larrain, B.(15.0)	Flannery, M. J.(345.7)	Dell'Ariccia, G.(72.2)	Humphrey, D. B.(616.7)
28	Scharfstein, D. S.(745.3)	Mahrt-Smith, J.(37.5)	Chen, J.(132.3)	Berger, A. N.(878.5)	Caprio, G.(142.4)
29	Moskowitz, T. J.(254.8)	Cochrane, J. H.(522.5)	Michaely, R.(371.1)	Zaidi, R.(1.0)	Love, I.(89.2)
30	Berger, A. N.(878.5)	Xing, Y.(94.2)	Bekaert, G.(678.9)	Gupta, P.(14.6)	Chen, L.(11.2)

Notes: Table ranks researchers based on various measures derived from publications in six financial economics journals published between 2006 and 2008. "Thanks" is the number of publications in this period that acknowledge the researcher for feedback, unless he was managing editor of that publication during the 2006-2008 period. See section 2 for variable definition.

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Table A15: Ranking according to different centrality measures in the co-author and commenter networks for 2009, ranks 1 through 30.

	Network of informal collaboration			Co-author network	
	Thanks	Eigenvector centrality	Betweenness centrality	Eigenvector centrality	Betweenness centrality
1	Stein, J. C.(994.3)	Sufi, A.(38.8)	Stulz, R. M.(1234.3)	Laeven, L.(167.9)	Stulz, R. M.(1234.3)
2	Campbell, J. Y.(1151.6)	Cohen, L. H.(10.3)	Duffie, J. D.(819.3)	Levine, R. L.(2319.2)	Aggarwal, R.(196.7)
3	Stulz, R. M.(1234.3)	Carlin, B. I.(3.2)	Lemmon, M. L.(253.1)	Demirgüç-Kunt, A.(554.8)	Bris, A.(42.8)
4	Amihud, Y.(1020.8)	Stulz, R. M.(1234.3)	Degryse, H.(119.9)	Beck, T.(705.2)	Fahlenbrach, R.(28.1)
5	Duffie, J. D.(819.3)	Kumar, A.(53.9)	Berger, A. N.(1036.3)	Schmukler, S. L.(126.4)	Cronqvist, H.(70.3)
6	Shleifer, A.(4223.8)	Roberts, M. R.(90.2)	Uppal, R.(172.0)	Maksimovic, V.(409.4)	Nilsson, M.(61.1)
7	Ritter, J. R.(1310.3)	Greenwood, R. M.(34.4)	Saunders, A.(323.4)	Caprio, G.(178.9)	Kahle, K. M.(102.6)
8	Titman, S. D.(1378.5)	Laeven, L.(167.9)	Amihud, Y.(1020.8)	Kane, E. J.(228.6)	Maxwell, W. F.(86.4)
9	Zingales, L.(1185.3)	Benmelech, E.(18.8)	Zhang, L.(78.1)	Driessen, J.(53.4)	Klapper, L. F.(155.4)
10	Ferson, W. E.(356.0)	Rauh, J. D.(34.3)	Karolyi, G. A.(623.9)	Gozzi, J. C.(8.5)	Harford, J.(164.0)
11	Petersen, M. A.(796.8)	Strebulaev, I. A.(26.5)	Morck, R. K.(1516.5)	Martínez Pería, M. S.(138.8)	Dahiya, S.(32.6)
12	Pástor, Ľ.(244.5)	Gomes, F. J.(72.8)	John, K.(486.3)	Huizinga, H. P.(234.8)	Duarte, J.(48.0)
13	Harvey, C. R.(987.2)	Uppal, R.(172.0)	Baker, M. P.(266.6)	Nicodème, G.(17.6)	Longstaff, F. A.(786.3)
14	Spiegel, M.(59.8)	Sensoy, B. A.(2.2)	French, K. R.(3504.7)	Feijen, E.(5.1)	Lemmon, M. L.(253.1)
15	Brennan, M. J.(650.2)	Chen, L.(24.0)	Hartmann, P.(72.6)	De Nicoló, G.(67.9)	Hong, H.(498.7)
16	Diamond, D. W.(1692.3)	Edmans, A.(21.1)	Chordia, T.(315.1)	Kroszner, R. S.(227.6)	Saar, G.(100.0)
17	Baker, M. P.(266.6)	Cremers, K. J. M.(97.5)	Gabaix, X.(395.8)	Klingebiel, D.(150.6)	Baruch, S.(20.3)
18	Wurgler, J.(332.5)	Acharya, V. V.(106.1)	Yeung, B. Y.(372.4)	Ueda, K.(10.6)	Santa-Clara, P.(176.4)
19	Karolyi, G. A.(623.9)	Hsu, P. H.(22.1)	Laeven, L.(167.9)	Claessens, S.(715.3)	Saunders, A.(323.4)
20	O'Hara, M.(664.3)	Dittmar, A. K.(114.7)	Stein, J. C.(994.3)	Chhaochharia, V.(31.3)	Valkanov, R. I.(115.6)
21	Lamont, O. A.(312.0)	Chava, S.(6.2)	Marco Pagano, M.(497.9)	Detragiache, E.(230.6)	Titman, S. D.(1378.5)
22	Kyle, A. S.(229.9)	Pasquariello, P.(31.9)	Campbell, J. Y.(1151.6)	Giannetti, M.(51.5)	Zhu, N.(45.1)
23	Gromb, D.(238.7)	Levine, R. L.(2319.2)	Musto, D. K.(100.6)	Tressel, T.(11.7)	Foley, C. F.(87.4)
24	Acharya, V. V.(106.1)	Yun, H.(1.0)	de Jong, F.(95.1)	Ayyagari, M.(9.0)	Bates, T. W.(51.4)
25	StrÖmberg, P.(216.4)	Huang, J.(10.2)	Helwege, J.(121.7)	Maenhout, P. J.(69.3)	Berger, A. N.(1036.3)
26	Flannery, M. J.(374.9)	Malloy, C. J.(145.4)	Longstaff, F. A.(786.3)	Cremers, K. J. M.(97.5)	Nair, V. B.(91.3)
27	Allen, F.(508.9)	Robinson, D. T.(61.4)	Brandt, M. W.(187.4)	Stulz, R. M.(1234.3)	Wang, J.(334.7)
28	Roberts, M. R.(90.2)	Kacperczyk, M.(34.2)	Harvey, C. R.(987.2)	Karolyi, G. A.(623.9)	Huang, J.(10.2)
29	Daniel, K. D.(714.5)	Gan, J.(10.8)	Lins, K. V.(259.2)	Doidge, C.(180.5)	Martínez Pería, M. S.(138.8)
30	Claessens, S.(715.3)	Dasgupta, S.(69.7)	Titman, S. D.(1378.5)	de la Torre, A.(15.2)	Lee, Y.(23.4)

Notes: Table ranks researchers based on various measures derived from publications in six financial economics journals published between 2007 and 2009. "Thanks" is the number of publications in this period that acknowledge the researcher for feedback, unless he was managing editor of that publication during the 2007-2009 period. See section 2 for variable definition.

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Table A16: Ranking according to different centrality measures in the co-author and commenter networks for 2010, ranks 1 through 30.

	Network of informal collaboration			Co-author network	
	Thanks	Eigenvector centrality	Betweenness centrality	Eigenvector centrality	Betweenness centrality
1	Stein, J. C.(1156.4)	Sufi, A.(70.8)	Stulz, R. M.(1387.7)	Stulz, R. M.(1387.7)	Chava, S.(16.7)
2	Stulz, R. M.(1387.7)	Roberts, M. R.(132.8)	Hasan, I.(198.6)	Doidge, C.(252.7)	Roberts, M. R.(132.8)
3	Amihud, Y.(1140.3)	Rauh, J. D.(52.0)	Uppal, R.(205.0)	Karolyi, G. A.(713.0)	Livdan, D. O.(48.8)
4	Campbell, J. Y.(1303.9)	Cohen, L. H.(23.6)	Lemmon, M. L.(310.2)	Miller, D. P.(292.4)	Zhang, L.(121.0)
5	Harvey, C. R.(1177.6)	Chava, S.(16.7)	Li, H.(103.3)	Lins, K. V.(333.6)	Lemmon, M. L.(310.2)
6	Duffie, J. D.(961.3)	Benmelech, E.(29.6)	Karolyi, G. A.(713.0)	Fahlenbrach, R.(41.6)	Campello, M.(136.0)
7	Petersen, M. A.(932.6)	Sensoy, B. A.(6.5)	Marco Pagano, M.(569.0)	Williamson, R.(262.3)	Graham, J. R.(724.5)
8	Roberts, M. R.(132.8)	Greenwood, R. M.(47.0)	Brandt, M. W.(232.0)	Erel, I.(9.2)	Stulz, R. M.(1387.7)
9	Diamond, D. W.(1878.2)	Carlin, B. I.(11.1)	Pástor, Ľ.(325.3)	Bargeron, L. L.(8.9)	Bates, T. W.(64.4)
10	Shleifer, A.(4998.8)	Taylor, L. A.(6.0)	Amihud, Y.(1140.3)	Zutter, C. J.(47.6)	Kumar, P. C.(79.5)
11	Titman, S. D.(1620.7)	Kumar, A.(70.6)	Zhang, L.(121.0)	Schlingemann, F. P.(220.8)	Johnson, S. A.(138.6)
12	Ferson, W. E.(385.6)	Yun, H.(2.2)	Yeung, B. Y.(454.4)	Aggarwal, R.(222.5)	Miller, D. P.(292.4)
13	Baker, M. P.(341.3)	Korteweg, A.(3.0)	Bekaert, G.(928.1)	Low, A.(4.2)	Brav, A.(444.9)
14	Spiegel, M.(67.8)	Petersen, M. A.(932.6)	Shleifer, A.(4998.8)	Ayyagari, M.(18.0)	Sorescu, S. M.(149.0)
15	Kyle, A. S.(255.3)	Matsa, D. A.(5.9)	Massa, M.(85.6)	Kahle, K. M.(119.8)	Doidge, C.(252.7)
16	Pástor, Ľ.(325.3)	Edmans, A.(39.1)	John, K.(542.1)	Bates, T. W.(64.4)	Ayyagari, M.(18.0)
17	Zingales, L.(1422.0)	Tang, T. T.(3.0)	Berger, A. N.(1209.7)	Bae, K. H.(195.4)	Goldstein, I.(72.6)
18	Karolyi, G. A.(713.0)	Leary, M. T.(106.1)	Goldstein, I.(72.6)	Tan, H.(19.7)	Seasholes, M. S.(177.7)
19	Dumas, B.(608.0)	Koijen, R. S.(9.7)	Harvey, C. R.(1177.6)	DeAngelo, H.(655.5)	Bond, P.(47.3)
20	Ritter, J. R.(1471.9)	Schenone, C.(36.1)	Titman, S. D.(1620.7)	Stahel, C. W.(1.0)	Naveen, L.(120.3)
21	Uppal, R.(205.0)	Ivashina, V.(9.6)	Lins, K. V.(333.6)	Boyson, N. M.(5.8)	Musto, D. K.(124.9)
22	Brennan, M. J.(718.1)	van Binsbergen, J. H.(7.6)	Megginson, W. L. B.(928.9)	DeAngelo, L. E.(724.8)	Sufi, A.(70.8)
23	Jagannathan, R.(1409.1)	Strebulaev, I. A.(49.5)	Ritter, J. R.(1471.9)	Demirgüç-Kunt, A.(673.1)	Massa, M.(85.6)
24	Bolton, P.(610.1)	Linnainmaa, J. T.(2.0)	French, K. R.(4056.2)	Lel, U.(13.2)	Daniel, N. D.(119.4)
25	Lemmon, M. L.(310.2)	Hsu, P. H.(27.3)	Stein, J. C.(1156.4)	Maksimovic, V.(482.4)	Reed, A. V.(93.0)
26	Cochrane, J. H.(727.3)	Dittmar, A. K.(146.9)	Baker, M. P.(341.3)	Gagnon, L.(39.5)	Brandt, M. W.(232.0)
27	Brandt, M. W.(232.0)	Massa, M.(85.6)	Morck, R. K.(1712.7)	Laeven, L.(216.5)	Beck, T.(880.0)
28	Kaplan, S. N.(862.6)	Stulz, R. M.(1387.7)	Grace, M. F.(79.2)	Beck, T.(880.0)	Rauh, J. D.(52.0)
29	John, K.(542.1)	Shleifer, A.(4998.8)	Campbell, J. Y.(1303.9)	Levine, R. L.(2619.5)	Laeven, L.(216.5)
30	Schoar, A.(202.4)	Cremers, K. J. M.(137.1)	Cronqvist, H.(98.3)	Hasan, I.(198.6)	Rocholl, J.(10.3)

Notes: Table ranks researchers based on various measures derived from publications in six financial economics journals published between 2008 and 2010. "Thanks" is the number of publications in this period that acknowledge the researcher for feedback, unless he was managing editor of that publication during the 2008-2010 period. See section 2 for variable definition.

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Table A17: Ranking according to different centrality measures in the co-author and commenter networks for 2011, ranks 1 through 30.

	Network of informal collaboration			Co-author network	
	Thanks	Eigenvector centrality	Betweenness centrality	Eigenvector centrality	Betweenness centrality
1	Stein, J. C.(1330.5)	Edmans, A.(74.0)	Stulz, R. M.(1579.7)	Lin, C.(41.7)	John, K.(603.3)
2	Roberts, M. R.(190.1)	Sufi, A.(119.1)	Karolyi, G. A.(800.5)	Ma, Y.(61.7)	Goldstein, I.(99.6)
3	Petersen, M. A.(1139.9)	Carlin, B. I.(18.7)	Acharya, V. V.(235.3)	Houston, J. F.(271.4)	Bebchuk, L. A.(531.6)
4	Stulz, R. M.(1579.7)	Erel, I.(20.1)	Degryse, H.(183.0)	Xuan, Y.(7.3)	Cremers, K. J. M.(199.0)
5	Shleifer, A.(5911.4)	Matsa, D. A.(14.2)	Amihud, Y.(1277.7)	Lin, P.(108.8)	Brav, A.(512.5)
6	Duffie, J. D.(1098.1)	Chava, S.(41.7)	Bekaert, G.(1057.2)	Zou, H.(37.1)	Nair, V. B.(186.5)
7	Campbell, J. Y.(1475.7)	Acharya, V. V.(235.3)	Berger, A. N.(1361.7)	Campello, M.(191.9)	Graham, J. R.(911.4)
8	Harvey, C. R.(1376.8)	Rauh, J. D.(70.2)	Van Nieuwerburgh, S. G.(96.3)	Malatesta, P. H.(391.4)	Acharya, V. V.(235.3)
9	Diamond, D. W.(2107.4)	Massa, M.(115.3)	Campbell, J. Y.(1475.7)	Barth, J. R.(289.7)	Hasan, I.(259.6)
10	Titman, S. D.(1871.3)	Benmelech, E.(44.8)	Harvey, C. R.(1376.8)	Song, F. M.(140.0)	Ferreira, M.(76.7)
11	Amihud, Y.(1277.7)	Kumar, A.(104.2)	Cronqvist, H.(122.5)	Officer, M. S.(75.8)	Brandt, M. W.(271.5)
12	Allen, F.(702.0)	Sensoy, B. A.(24.2)	Jagannathan, R.(1612.2)	Michael, F. A.(296.5)	Santa-Clara, P.(253.8)
13	Jagannathan, R.(1612.2)	Taylor, L. A.(14.3)	Hasan, I.(259.6)	Liu, P.(13.0)	Harvey, C. R.(1376.8)
14	Pástor, Ľ.(426.6)	Giannetti, M.(94.9)	Brandt, M. W.(271.5)	Sonia Man Lai, W. M.(48.1)	Berger, A. N.(1361.7)
15	Cochrane, J. H.(834.0)	Holderness, C. G.(514.9)	Saunders, A.(410.0)	Graham, J. R.(911.4)	Saunders, A.(410.0)
16	Kaplan, S. N.(985.9)	Greenwood, R. M.(60.5)	Ritter, J. R.(1627.4)	Harvey, C. R.(1376.8)	Carlin, B. I.(18.7)
17	Ritter, J. R.(1627.4)	Linnainmaa, J. T.(4.0)	Faccio, M.(629.1)	Almeida, H. V.(215.0)	Landier, A.(144.5)
18	Weisbach, M. S.(1239.4)	Ivashina, V.(40.3)	Allen, F.(702.0)	Giambona, E.(14.8)	Gervais, S.(208.6)
19	Schoar, A.(294.6)	Kolasinski, A. C.(9.0)	Goldstein, I.(99.6)	Hackbarth, D.(53.0)	Viswanathan, S.(308.7)
20	Baker, M. P.(447.7)	Cohen, L. H.(41.5)	Ivashina, V.(40.3)	Galvão, A. F.(8.7)	Odean, T.(895.9)
21	Strahan, P. E.(502.6)	Yun, H.(5.7)	John, K.(603.3)	Dewenter, K. L.(212.4)	Giambona, E.(14.8)
22	Dumas, B.(647.9)	Gormley, T. A.(8.0)	Ongena, S.(187.6)	Han, X.(14.3)	Ivashina, V.(40.3)
23	Acharya, V. V.(235.3)	Roberts, M. R.(190.1)	Griffin, J. M.(240.2)	Ozbas, O.(24.4)	Campello, M.(191.9)
24	Bolton, P.(679.4)	Petersen, M. A.(1139.9)	Massa, M.(115.3)	Sensoy, B. A.(24.2)	Officer, M. S.(75.8)
25	Ferson, W. E.(419.1)	Hoberg, G.(24.0)	Masulis, R. W.(916.3)	Lowry, M.(186.5)	Stulz, R. M.(1579.7)
26	Karolyi, G. A.(800.5)	Yang, J.(7.3)	Uppal, R.(245.0)	Schwert, G. W.(1758.0)	Scharfstein, D. S.(1049.8)
27	Gabaix, X.(563.9)	Koijen, R. S.(17.9)	Chordia, T.(465.1)	Brandt, M. W.(271.5)	Rocholl, J.(19.5)
28	Spiegel, M.(85.3)	Manso, G.(13.4)	Li, K.(101.7)	Xu, L.(37.3)	Cronqvist, H.(122.5)
29	Kyle, A. S.(277.3)	Da, Z.(6.6)	Li, H.(131.9)	Bekaert, G.(1057.2)	Bekaert, G.(1057.2)
30	Starks, L. T.(480.4)	Gabaix, X.(563.9)	Frame, W. S.(112.9)	Kumar, A.(104.2)	Miller, D. P.(336.3)

Notes: Table ranks researchers based on various measures derived from publications in six financial economics journals published between 2009 and 2011. "Thanks" is the number of publications in this period that acknowledge the researcher for feedback, unless he was managing editor of that publication during the 2009-2011 period. See section 2 for variable definition.

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