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► **To cite this version:**

Yann Giraud, José Edwards, Christophe Schinckus. A quantitative turn in the historiography of economics?. *Journal of Economic Methodology*, inPress. halshs-01876415

**HAL Id: halshs-01876415**

**<https://shs.hal.science/halshs-01876415>**

Submitted on 18 Sep 2018

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# A quantitative turn in the historiography of economics?<sup>1</sup>

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*Note: This short essay is an introduction to Not Everything that can be Counted Counts: Historiographic Reflections on Quantifying Economics, which will be published, in its final form, as a special issue of the Journal of Economic Methodology in December 2018 (vol. 24, n°4).*

**Abstract:** Quantitative approaches are not yet common among historians and methodologists of economics, although they are in the study of science by librarians, information scientists, sociologists, historians, and even economists. The main purpose of this essay is to reflect methodologically on the historiography of economics: is it witnessing a quantitative turn? Is such a turn desirable? We answer the first question by pointing out a “methodological moment”, in general, and a noticeable rise of quantitative studies among historians of economics during the past few years. To the second question, all contributors to this special issue bring relatively optimistic answers by highlighting the benefits of using quantitative methodologies as complements to the more traditional meta-analyses of both historians and methodologists of economics.

**Keywords:** Quantitative statements, Bibliometrics, Network analysis, Topic modeling, Organizational history

**JEL classification:** B00, B2, B4

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<sup>1</sup> Acknowledgements: this project began with a workshop/roundtable on “the quantitative turn on the history of economics” organized at the Université de Cergy-Pontoise in July, 2016, with the support of the project Labex MME-DII (ANR11-LBX-0023-01), and ECOS-CONICYT #C15H02 (for José Edwards). We wish to thank all participants to that workshop, and all those present in subsequent sessions at the 2017 conferences of the European Society for the History of Economic Thought (ESHET), the History of Economics Society (HES), and the International Network for Economic Method (INEM). We are grateful of all authors involved in this special issue, as well as to Tiago Mata, Till Düppe, Yves Gingras, Dorian Jullien, Matthias Klaes, Claire Lemerrier, Clément Levallois, Avner Offer, Nicolas Vallois, and the editors of this journal.

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“not everything that can be counted counts, and not everything that counts can be counted” (W. B. Cameron, 1963)

### **1 A moment in the historiography of economics**

Quantitative approaches are not yet common among historians and methodologists of economics, although they are in the study of science by librarians, information scientists, sociologists, historians, and even economists. With the exception of the examples discussed in the next sections of this essay – and throughout this whole special issue – historians of economics have favored other methodologies, and qualitative forms of analysis. Surveys by historians of economics claim that their subfield has traditionally been mostly about the textual exegesis of published work by “great economists” (e.g. Backhouse *et al.* 1997, Biddle 2003, Forget & Goodwin 2011). Another interesting claim is that they *often* proceed through statements that are quantitative in nature, which are, however, seldom checked or tested (Backhouse *et al.* 1997). Here below, three recent examples of this sort of statements by historians/methodologists of economics (our highlights). There are certainly a *few* more appearing throughout this whole issue:

“the idea of a specialty structure is also compatible with *the widespread view* of economics that it has a core that is then applied to different objects” (Claveau & Gingras 2016, p. 554)

“it is probably safe to say that *the vast majority of* economics was applied in some way” (Backhouse & Cherrier 2017, p. 26)

“*Most* historians of contemporary (post-World War II) economics develop their histories [...] as narratives in which they provide explications and interpretations of the actors’ scientific contributions” (Düppe & Weintraub, forthcoming)

The main purpose of this and the following papers in this issue is to methodologically reflect on quantitative tools useful for studying the history and methodology of economics. The issue at stake is twofold. First, dealing with the following question: is there a quantitative turn underway? We claim that there is some sort of “methodological moment” happening among (at least the younger) historians of economics, together with a noticeable rise of quantitative studies. Second: is this a desirable prospect for the future historiography (and methodology) of economics? The ensuing papers in this issue bring relatively optimistic answers, signaling the importance of existing quantitative methodologies for both complementing and expanding the scope of research on economics. In doing so, they introduce a set of “new” techniques, which may help those interested in justifying/checking their quantitative statements, be them economists, methodologists, or historians of economics.

In addition to discussing quantitative approaches to study science, this issue also joins the interests of historians and methodologists willing to write about recent/contemporary economics. A quite new and interesting feature of the historiography of economics is the attraction of younger scholars to exploring recent (post-1930s) or even contemporary (post-1970) economics and other social sciences. This movement includes not only conferences

and publications, but also research centers and societies exploring the life and work of, mainly, living authors (in a broad sense, not only writers). These “new” historians are turning to new methods to solve their problems, moving away from the “old” textual exegesis. After all, why interpreting texts by just a few “great scientists” if one can create witness seminars, interview virtually every living author, or quantify and analyze the massive production of economists in its myriad different aspects? Judging by the recent attendance to sessions on these historiographic topics – those in this project, and some others related to T. Düppe and R. Weintraub’s (eds.) *Contemporary Historiography of Economics* – there is, indeed, some sort of methodological moment happening among historians of economics.

Quantitative methodologies may also seem a timely addition to the toolboxes of historians and methodologists of economics, as economists themselves have started quantifying their own discipline (a third form of reflexivity on economics). By turning to quantitative methods, historians and methodologists of economics may ironically come closer to interacting with the more mainstream “economists of economics” (more below). That situation would contrast against the “old” historiographic talks about rational vs. historical reconstructions and the roles of historians of economic thought (vs. historians of economics) as either economists, or rather historians of social sciences (see also Düppe & Weintraub, forthcoming, and also Herfeld & Doehne, this issue).

In the next two sections, we present a quite comprehensive overview of past and present quantitative studies, which may (or may not) lead to turning the ways in which historians and methodologists relate to counting the different aspects of economics.

## **2 Is there a turn? A quick look at past quantitative histories of economics**

The use of quantitative information by historians of economics is not recent. It is actually as old as the establishment of the history of economics as a separate subfield during the late-1960s. By then, the first issue of the *Journal of Economic Literature* included a historical study of publications of the *American Economic Association* (AEA) by A. W. Bob Coats (1969). That investigation relied on quantitative data as Coats counted percentages of theoretical papers in the *American Economic Review*, *Quarterly Journal of Economics*, and *Journal of Political Economy* over time, to discuss the role of editorship in those journals. However, Coats' figures were not published in the main text but in footnotes (and he did not explicitly detail his dataset), as his paper was not just quantitative in nature, but also based on archival material.

By the early-1980s, in an analysis of the first decade of *History of Political Economy*, Coats (1983) credited George Stigler as “the pioneer” of quantitative studies among historians of economics (see Stigler & Freidland 1975, 1979). In that same issue, Neil de Marchi and John Lodewijks (1983) developed a quantitative study of submissions to *History of Political Economy* during its first decade. Later on, during the 1980s, Deirdre McCloskey's *The Rhetoric of Economics* (1998 [1985]), used citation counts to characterize the dissemination of Robert Solow and John Muth's contributions to modern macroeconomic theory. After that, McCloskey and Stephen T. Ziliak (1996) also relied on quantitative information when analyzing all econometric studies published in the *American Economic Review* during the 1980s<sup>5</sup>. They applied a series of tests to assess whether they respected a series of “good practices”, concluding that “70 percent of the empirical papers

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<sup>5</sup> With 851 citations, that one is also undoubtedly among the most cited papers on economic methodology.

Source: Google Scholar, retrieved May 31st, 2018.

in the *AER* did not distinguish statistical significance from economic, policy, or scientific significance” (McCloskey and Ziliak 1996: 106).

The year after, Backhouse, Middleton and Tribe’s (1997) quantitative analysis of economics, focused mostly on the normative undertakings of ranking economics departments and assessing the “productivity” of economists. They pointed at some limitations of those studies providing a few suggestions to improve that kind of research. While not straightforwardly intended as a quantitative historiography of economics, Backhouse et al. (1997) relied on data produced by Backhouse for two other articles published in *History of Political Economy* (supplements). Specifically, Backhouse (1996) had used a wide range of quantitative and qualitative information (human resource records and studies about the opinions of British economists) to track the evolution of the postwar British economics profession. That analysis aimed at estimating the “Americanization” of the discipline in Britain concluding that, in general, British economists had kept their distinctive style. Two years later, in a survey of the evolution of US economics, Backhouse (1998) looked at the *Journal of Political Economy*, the *American Economic Review* and the *Quarterly Journal of Economics* to establish a few trends: the rise of theoretical economics and the use of mathematical techniques (both diagrammatical and algebraic), as well as the role of European émigrés in these disciplinary developments. These studies resembled some more sociological studies of economics, although proceeding through sort of “self-made” quantitative methods<sup>6</sup>.

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<sup>6</sup> Meanwhile, a number of sociological works on economics as a profession were conducted using established quantitative methods, like Frédéric Lebaron’s (1997) “La dénégation du pouvoir” (more on this in Cherrier and Svorenčík, this issue). However, that work did only catch the attention of some (mostly French) economists and historians of economics. More recently, some others have followed that quantitative strand (e.g. Marion Fourcade, Etienne Ollion and Yann Algan’s 2015 study of the ethos of economists). In general,

Since the mid-1990s, the development of a number of digital platforms have eased the access to data on economic knowledge, which did not necessarily generate much quantitative work by either historians or methodologists of economics (at least not before the 2010s)<sup>7</sup>. One notable exception is the work by Kevin Hoover, using quantitative information retrieved from JSTOR on several occasions. In his presidential address to the History of Economics Society, Hoover (2004) showed a significant decline of the idea of causation in economic thinking, from the 1930s onwards (to rehabilitate only during the 1980s). He looked at percentages of articles containing words from the “causal family”, and developed a series of diagrams supporting his claims<sup>8</sup>.

The 2010s have so far witnessed a noticeable increase in quantitative studies of all sorts, suggesting some sort of “quantitative turn” in the historiography of economics (see Cherrier and Svorencik, this issue, for a complementary analysis of this recent literature). José Edwards’ (2010) PhD dissertation used EconLit (the AEA database) to count the rise of economic studies of happiness since the late-1990s. Clément Levallois et al. (2012) used

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quantitative methodologies are well established among sociologists of science, see Shwed & Bearman (2010) for a quantitative analysis of the formation of “scientific consensus”.

<sup>7</sup> For instance, JSTOR (since 1995) or Repec (since 1997), the latter specific to economics. This is not to say that science indexing is that recent. It is as old as Eugene Garfield’s Institute for Scientific Information (1960) and its Science Citation Index (1964), now available through Clarivate’s Web of Science. See Gingras (2016) and Edwards et al. (2017) for two histories of bibliometrics, and Cherrier (2017) for a history of the JEL classification system.

<sup>8</sup> In that paper, Hoover’s recourse to quantitative methods was justified by arguing that he was “above all an empiricist” (p. 151). More recently, Hoover (2013) used quantitative information retrieved from JSTOR to tell the history of microfoundations in economics. In that article (as opposed to the one from 2004), he emphasized on the limitations of quantitative methods (like text mining) by noting that economists involved in microfoundational projects would not necessarily use that term. In general, Hoover has used quantitative analysis as a starting point for further investigations, rather than as a methodological strategy. To some extent, his attitude towards quantification is the Marshallian “use it then burn it”.

a wide array of quantitative techniques – including social and semantic network analysis – to depict the emergence of neuroeconomics at the crossroads of the social and natural sciences. Yves Gingras and Christophe Schinckus (2012) provided a quantitative account – including descriptive statistics and network analysis – of the emergence of econophysics with information retrieved from the Web of Science. Their study established that, although econophysics was marginal in economics and finance, it had gained centrality in physics. Franck Jovanovic and Schinckus (2013) relied on the preceding study to tell a more chronological account of econophysics, adding some more quantitative information.

The year after, the *History of Political Economy* supplement devoted to MIT economics (2014) included a number of articles using quantitative data to retrace the history of the MIT's thought collective, where archival material proved ineffective. Pedro Duarte (2014) used information from the MIT Barton catalogue and the MIT bulletin to study MIT's graduate program, whereas Andrej Svorenčik (2014) provided a systematic analysis of MIT's rise to prominence relying on – partly quantitative – biographical information. That latter contribution was the first application to the history of economics of prosopography, a method that allows for writing collective biographies, which has been relatively common among sociologists of science for the past four decades (see Shapin and Thackray 1974).

Even more recently, Duarte and Giraud (2016) made a bibliographic analysis of the historiography of economics by mainstream economists, using the JEL classification to retrieve history of thought papers (B codes) in major economics journals. However, that paper was not mainly intended as a quantitative analysis but as a historiographical contribution, supplemented with a long qualitative account of the increasing gap between the historiography of economics and its mother discipline. That same year, François

Claveau and Gingras (2016) published a bibliometric history of specialties in economics. That paper, while not conclusive as a standalone historiography of economics, offered a new method for exploring the evolution of the discipline, by mixing network analysis (from bibliographic couplings) with keyword retrieval<sup>9</sup>. It must be noted that the novelty of that method to explore the macro-history of economics also generated skepticism (see DeVroey 2016).

Finally, the 2017 supplement of *History of Political Economy*, devoted to the ‘so-called applied turn in economics’, includes some more quantitative studies. Specifically, Jeff Biddle and Daniel Hamermesh (2017) used econometrics to document the decline of theory in applied microeconomics, also showing that theoretical economics still yields bigger wages in the US academia. In the same vein, Matthew Panhans and John Singleton (2017) used data retrieved from eleven economics journals, to depict the development of quasi-experimental methods in applied economics.

This recent increase of quantitative historiographies of economics is, to some extent, related to the rise of quantitative studies performed by economists reflecting on their own discipline. That seems to respond, in turn, to the enormous amount of published academic work by economists (i.e. around 25,000 articles indexed in the Web of Science for 2017, only), something Backhouse et al. (1997) did not fully anticipate<sup>10</sup>. Some of the studies by economists (of economics) evaluate and rank economics journals, institutions and scholars (e.g. Zimmermann 2013, Card & DellaVigna 2013, Rath & Wohlrabe 2016). Others analyze the content of recent economics literature (e.g. Kim et al. 2006, Kelly &

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<sup>9</sup> That project also related to creating a digital platform that remains available to all scholars interested in future quantitative research <http://www.digitalhistoryofscience.org/economics/>, last retrieved June 26, 2018.

<sup>10</sup> See Partha & David 1994, Stephan 1996, and Mirowski & Sent 2002 for accounts of the economics of science, which quite closely relate to the economic analysis of economics.

Bruestle 2011, Hamermesh 2013, Andrikopoulos et al. 2016, Angrist et al. 2017). Some others even make theory out of economics documents, like Hargreaves Heap & Parikh (2005) on the diffusion of empirical ideas through economic journals (econometrics vs. experimental methodologies). Goyal *et al.* (2006) on global science holding “smaller worlds” for economists, or Das *et al.* (2013) on the geography of empirical economics papers.

Methodologists and historians of (at least) recent economics should not ignore this increasing body of literature, which is often published in major economics journals. While checking this literature may lead historians and methodologists of economics to engage in discussions with more mainstream economists, that prospect must be nuanced, as most of the aforementioned papers do not take the form of historical/methodological reflections on economics, but serve other purposes – like attributing credit or disseminating specific forms of knowledge – which are not among the main goals of historians and methodologists, who wish to keep distance from the objects they study.

If historians and methodologists are to remain detached from the quantitative analysis by economists, they should perhaps distinguish themselves by either developing their own quantitative methods, or borrowing them from related disciplines, like the history of science, science and technology studies (STS), or digital humanities (DH). As we detail in the next (and last) section of this essay, the following contributions to this special issue develop in this last direction.

### **3 Some alternatives for quantifying past economics**

The following contributions to this special issue discuss different quantitative methods for studying economics, emphasizing on both their scope and limitations: citation analysis,

network analysis, topic modeling, quantitative organizational history, prosopography and correspondent factor analysis. In addition, Cherrier and Svorencik's postscript gives a critical analysis of these methods in particular, and of the promises, perils and challenges of an eventual quantitative turn in the historiography (and methodology) of economics more generally.

Franck Jovanovic's paper uses descriptive citation statistics to discuss the historiography of a particular topic: the efficient market hypothesis (EMH), well-known to most financial economists acquainted with Eugene Fama's life and work. By quantitatively investigating three key moments usually present in qualitative historiographies of the EMH (the dissemination of Luis Bachelier's work, the reception of Paul Cootner's "Stock prices", and Fama and LeRoy's controversy), Jovanovic shows how citation counts may be used to either corroborate, complement, or qualify traditional (often internalist) narratives of that strand of research.

Catherine Herfeld and Malte Doehne propose a methodological reflection on the application of network analysis, discussing five reasons why it may open ample opportunities for collecting, processing, analyzing and interpreting relational data, and developing the historiography of recent economics as history of the social sciences. They offer a detailed presentation of network analysis (which they illustrate with several examples), and its potential for exploring events where individuals do not matter as much as collectives.

Angela Ambrosino, Mario Cedrini, John Davis, Stefano Fiori, Marco Guerzoni and Massimiliano Nuccio, present LDA (Latent Dirichlet Allocation), a topic modeling technique they use to investigate the thematic structure of economics (without having recourse to JEL codes). Studying the full texts of 250,846 economics articles retrieved from

the JSTOR database, their text-mining method allows them to map economic knowledge by analyzing the different topic of economics, in general, and the case of “law and economics” in particular.

François Claveau and Jérémie Dion present an organizational history of economics by studying central banking in its relationship to the economics profession. They provide a threefold quantitative analysis of “research economists” working in central banks (research staff, affiliations, and their citation impacts), showing how contributions to monetary economics produced by “research armies” in central banks, have greater impact than those produced by outsiders to those “scientized” organizations.

Finally, Béatrice Cherrier and Andrej Svorenčik’s postscript recapitulates some of the preceding observations/findings together with briefly presenting two additional quantitative methods: prosopography and correspondence factor analysis. After clarifying that quantitative methods should not be used for their own sake, but selected for their ability to answer pertinent historiographical (and methodological) questions, they also criticize the claim by quantitative analysts, according to which their methods are less “biased” than others. As for the challenges of an eventual quantitative turn, they conclude by developing on the institutions necessary to achieve a fruitful combination of quantitative and qualitative methods, to explore the dissemination, influence and structural dynamics of economics.

All contributors to this special issue tend to agree on the usefulness of quantitative methodologies, for studying evolutions within economics. Yet, they all present their methods as complementary (and not a replacement) to traditional – qualitative – ways of advancing the historiography and methodology of economics. By quantifying specific indicators such as the number of publications, citation counts, or word frequencies, authors

of this special issue focus on specific categories of economic knowledge that can be interpreted only in combination with socio-historical contexts. Data do not speak for themselves, and the quantification of some components of economic knowledge does not necessarily inform us about the full content and dynamics of it<sup>11</sup>.

In a sense, this special issue does not depict a “turn” in the historiography of economics, but an extension of its scope and methods. The quantification of economic knowledge resulting from the digitization of the academic sphere can help “statistizing” and visualizing the development of economics in its different aspects. But it should not, per se, generate a new and different historiography or methodology of economics.

As pointed out earlier, quantitative methods of investigation have been in the radar of historians and methodologist of economics for many decades, and seem to be gaining visibility thanks to an outpour of recent work. Whether or not a “turn”, quantitative methods are here to nurture new historiographic and methodological discussions. While future historians or methodologists of economics may not choose to follow this route, they should at least take these methods into account, and incorporate countings that do count into their narratives.

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<sup>11</sup> For instance, an analysis connecting two scholars through bibliographic couplings or co-citations, does not tell us if those two authors are sharing opinions or rather criticizing each other. In the same vein, the accumulation of key words identified through topic modeling does not give useful information, unless considered through the lens of a more interpretative history.

## References

- Andrikopoulos, Andreas, Aristeidis Samitas, and Konstantinos Kostaris. 2016. "Four Decades of the Journal of Econometrics: Coauthorship Patterns and Networks." *Journal of Econometrics* 195 (1): 23–32.
- Angrist, Joshua, Pierre Azoulay, Glenn Ellison, Ryan Hill, and Susan Feng Lu. 2017. "Economic Research Evolves: Fields and Styles." *American Economic Review* 107 (5):293–97.
- Backhouse, Roger. 1996. "The changing character of British economics." *History of Political Economy* 28 (supplement), 1996, pp. 31–58.
- \_\_\_\_\_. 1998. "The transformation of US economics, 1920–1960, viewed through a survey of journal articles." *History of Political Economy* 30 (supplement), 1998, pp. 85–107.
- Backhouse, Roger and Béatrice Cherrier. 2017. "The Age of the Applied Economist: The Transformation of Economics since the 1970s." *History of Political Economy* (49) Suppl.1: 1-33.
- Backhouse, Roger, Roger Middleton and Keith Tribe. 1997. "'Economics is what economists do', but what do the numbers tell us." Paper presented at the Annual History of Economic Thought Conference, University of Bristol, 3-5 September 1997.
- Biddle, Jeff. 2003. "Research styles in the history of economic thought." In Samuels, Warren J., Jeff Biddle, and John Bryan Davis. 2003. *A Companion to the History of Economic Thought*: 1-8.

- Biddle, Jeff and Daniel Hamermesh. 2017. "Theory and Measurement: Emergence, Consolidation, and Erosion of a Consensus." *History of Political Economy* (49) Suppl.1: 34-57.
- Card, David, and Stefano DellaVigna. 2013. "Nine Facts about Top Journals in Economics." *Journal of Economic Literature* 51 (1): 144–61.
- Claveau, François, and Yves Gingras. 2016. "Macrodynamics of Economics: A Bibliometric History." *History of Political Economy* 48 (4): 551–92.
- Coats, A. W. 1969. "The American Economic Association's Publications: An Historical Perspective." *Journal of Economic Literature*, 7 (1): 57-68.
- Coats, A. W. 1983. "The First Decade of HOPE (1968–79)." *History of Political Economy* 15 (3): 303–19.
- Das, Jishnu, Quy-Toan Do, Karen Shaines, and Sowmya Srikant. 2013. "U.S. and Them: The Geography of Academic Research." *Journal of Development Economics* 105 (November): 112–30.
- De Marchi, Nei, and John Lodewijks. 1983. "HOPE and the Journal Literature in the History of Economic Thought." *History of Political Economy* 15 (3): 321–43.
- De Vroey, Michel. 2016. "Bibliometric versus Inside-Knowledge History? An Assessment of Claveau and Gingras's 'Macrodynamics of Economics: A Bibliometric History'." Working paper.
- Duarte, Pedro Garcia. 2014. "The Early Years of the MIT PhD Program in Industrial Economics." *History of Political Economy* 46 (supplement): 81-108.

- Duarte, Pedro Garcia and Yann Giraud. 2016. "The Place of the History of Economic Thought in Mainstream Economics, 1991–2011, Viewed Through A Bibliographic Survey." *Journal of the History of Economic Thought* 38 (4): 431–62.
- Düppe, Till, and E. Roy Weintraub. 2018 (forthcoming). *Contemporary Historiography of Economics*. Cheltenham, UK: Routledge.
- Edwards, José. 2010. "Abstract. Joyful Economists: Remarks on the History of Economics and Psychology from the Happiness Studies Perspective." *Journal of the History of Economic Thought* 32 (04): 611–13.
- Edwards, José, Iván Ledezma, Aldo Mascareño & Rodrigo Paillacar. 2017. "From Little to Global Science: Bibliometrics and the Historiography of Economics". Paper presented at the 6<sup>th</sup> Conference of the Asociación Latinoamericana de Historia del Pensamiento Económico (ALAHPE).
- Forget, Evelyn L., and Craufurd D. Goodwin. 2011. "Intellectual Communities in the History of Economics." *History of Political Economy* 43 (1):1–23.
- Fourcade, Marion, Etienne Ollion, and Yann Algan. 2015. "The Superiority of Economists." *Journal of Economic Perspectives* 29 (1): 89–114.
- Gingras, Yves. 2016. *Bibliometrics and Research Evaluation: Uses and Abuses*. Cambridge, MA: MIT Press.
- Gingras, Yves and Christophe Schinckus. 2012. "The Institutionalization of Econophysics in the Shadow of Physics." *Journal of the History of Economic Thought* 34 (1): 109–30.
- Goyal, Sanjeev, Marco J. van der Leij, and José Luis Moraga-González. 2006. "Economics: An Emerging Small World." *Journal of Political Economy* 114 (2): 403–12.

- Hamermesh, Daniel S. 2013. "Six Decades of Top Economics Publishing: Who and How?" *Journal of Economic Literature* 51 (1): 162–72.
- Hargreaves Heap, Shaun P., and Ashok Parikh. 2005. "The Diffusion of Ideas in the Academy: A Quantitative Illustration from Economics." *Research Policy* 34 (10): 1619–32.
- Hoover, Kevin D. 2004. "Lost Causes." *Journal of the History of Economic Thought*, 26 (2): 149-64.
- \_\_\_\_\_. 2013. "Microfoundational programs." In *Microfoundations Reconsidered: The Relationship of Micro and Macroeconomics in Historical Perspective*, edited by Pedro Garcia Duarte and Gilberto Tadeu Lima, Cheltenham: Edward Elgar: 19-61.
- Jovanovic, Franck and Christophe Schinckus. 2013. "The Emergence of Econophysics: A New Approach in Modern Financial Theory." *History of Political Economy* 45 (3): 443-73.
- Lebaron, Frédéric. 1997. "La dénégation du pouvoir : le champ des économistes français au milieu des années 1990." *Actes de la Recherche en Sciences Sociales* 119 (1): 3–26.
- Levallois, Clément, John A. Clithero, Paul Wouters, Ale Smidts and Scott A. Huettel. 2012. "Translating upwards: linking the neural and social sciences via neuroeconomics." *Nature Reviews Neuroscience* 13: 789–97.
- Kelly, Michael A., and Stephen Bruestle. 2011. "Trend of Subjects Published in Economics Journals 1969-2007." *Economic Inquiry* 49 (3): 658.
- Kim, E. Han, Adair Morse, and Luigi Zingales. 2006. "What Has Mattered to Economics Since 1970." *The Journal of Economic Perspectives* 20 (4).
- McCloskey, Deirdre. 1998 [1985]. *The Rhetoric of Economics*, 2<sup>nd</sup> edition. Madison, Wisconsin: The University of Wisconsin Press.

- McCloskey, Deirdre and Stephen T. Ziliak. 1996. "The Standard Error of Regressions." *Journal of Economic Literature*, 34 (1): 97-114.
- Mirowski, Philip, and Esther-Mirjam Sent, eds. 2002. *Science Bought and Sold: Essays in the Economics of Science*. Chicago: University of Chicago Press.
- Panhans, Matthew and John Singleton. 2017. "The Empirical Economist's Toolkit: From Models to Methods." *History of Political Economy* 49 (supplement): 127-157.
- Partha, Dasgupta, and Paul A. David. 1994. "Toward a New Economics of Science." *Research Policy*, Special Issue in Honor of Nathan Rosenberg, 23 (5): 487-521.
- Rath, Katharina, and Klaus Wohlrabe. 2016. "Recent Trends in Co-Authorship in Economics: Evidence from RePEc." *Applied Economics Letters* 23 (12): 897-902.
- Shapin, Steven and Arnold Thackray. 1974. "Prosopography as a research tool in history of science: The British scientific community, 1700-1900." *History of Science*, 12 (1): 1-28.
- Shwed, Uri, and Peter S. Bearman. 2010. "The Temporal Structure of Scientific Consensus Formation." *American Sociological Review* 75 (6): 817-40.
- Stephan, Paula E. 1996. "The Economics of Science." *Journal of Economic Literature* 34 (3): 1199-1235.
- Stigler, George J., and Claire Friedland. 1975. "The Citation Practices of Doctorates in Economics." *Journal of Political Economy* 83 (3): 477-507.
- Stigler, George J., and Claire Freidland. 1979. "The Pattern of Citation Practices in Economics." *History of Political Economy* 11 (1): 1-20.
- Svorenčík, Andrej. 2014. "Mit's Rise to Prominence: Outline of a Collective Biography." *History of Political Economy* 46 (supplement):109-33.
- Zimmermann, Christian. 2013. "Academic Rankings with RePEc." *Econometrics* 1 (3).