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Empirical investigation of co-authorship in the field of finance: A network perspective

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ABSTRACT

Collaboration among academic authors promotes innovation and research productivity and increases the quality of published papers. The aim of this paper is to investigate collaboration and co-authorship in the area of finance, focusing on ten leading journals in the field. We employed social network analysis to examine the structure of the networks and the ways in which authors, institutions and countries interact. Our empirical results indicate that co-authorship networks are greatly integrated. We also observed that the size of collaboration networks has been increasing over the last 18 years. Our findings highlight the mechanics of collaborative research production and are therefore useful for the administration of academic institutions and policymaking in higher education.

1. Introduction

Financial markets are structured within a social framework (MacKenzie, 2011). Financial markets consist of two interdependent social spaces, the financial economists and market participants (Chick & Dow, 2005). Financial economists affect the markets through their theories (MacKenzie, 2006; Preda, 2007). The field of finance constitutes a social dimension that it has a distinct cultural identity which is shaped by the social and the epistemological promotion of knowledge (Vieira & Teixeira, 2010). Market participants transform market institutions while implementing the theories that financial economists construct. Therefore the production of science is an outcome of the causal relation between financial markets and the academic community of financial economists. Within the production of science, publishing a paper in a highly ranked academic journal certifies one's reputation in the scientific community (Vieira & Teixeira, 2010). The complexity of tasks within the discipline and the ongoing competition for access to the uneven allocation of resources, reinforce scientific collaboration (Mulkay, 1976; Whitley, 2000). Academic journals constitute a social space in the sense that they gather researchers who systematically collaborate to produce research papers. In this context, researchers communicate in order to evaluate the output of their scientific work.

It is widely accepted that the evolution of academic research is supported by collaboration among authors. Collaboration contributes to the production of quality papers in science community. Moreover, co-authorship helps researchers overcome the insufficient knowledge resources they may face while publishing a paper. Research costs time and money. Hence, collaboration in economics is of great importance, as problems can be solved efficiently when one author links up with another, either from the same or a different institution. Co-authorship as an ongoing process can be described as divided segments that motivate people to share knowledge, skills and information. It may be assumed that social networks strengthen the groups of people involved in the process of publishing a paper. Chen, Assimakopoulos, Hongming, and Renyong (2013) explain that co-authorship in academic networks has the ability to promote innovation in the transition from knowledge transfer to an innovative partnership between institutions. Furthermore, it helps strong personalities come together, and it is reasonable to suppose that it increases the quality and quantity of published papers.

Along similar lines, co-authorship is significant especially in capital markets, where the global financial economy is experiencing large fluctuations in the form of financial crisis and long recession periods. Kwai Fatt, Ujum Abu, and Ratnavelu (2010) claim that collaboration promotes quality and key decisions over problems because people coordinate their actions towards mutually beneficial goals. In this paper, we study co-authorship in the field of mathematical finance.

The empirical literature of academic co-authorship in the field in mathematical finance is very restricted. Prior research from Andrikopoulos and Economou (2015) portrayed the social structure of editorial board membership in finance. Their work showed that editorship patterns in finance are nationally oriented and the rate of internationalization tends to increase along with the average number of

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editorial seats per journal. Also, they found that the editorial authority in finance has been widening up its perceptions on academic authority, with the leading finance journals becoming more receptive to the Non-US researchers and affiliations. A subsequent study from Andrikopoulos and Economou (2016) presented the network structure of sub-authorship in four elite finance journals. They found that the number of sub-authors increases along with the network's density and the number of maximal cohesive groups over time.

The contribution of co-authorship to science in the field of mathematical finance still remains blurred; to the best of our knowledge, this is the first study on co-authorship in the field of mathematical finance. Although the recent literature has generated considerable interest, no significant work has been done on collaboration among authors in economics. The approach we have used in this study provides additional insights and evidence to the current literature by describing the structure of collaboration patterns and identifying aspects of co-authorship. In contrast to previous studies, this empirical investigation focused on characteristics of network analysis to examine co-authorship in the field of mathematical finance. To investigate co-authorship, we combined productivity rankings and network analysis to study whether and to what extent collaboration exists between authors. The empirical evidence provides significant information about co-authorship; we focus on how these findings might be useful and assess and discuss the phenomenon in section below. The purpose of this paper is to fill the gap in the study on academic co-authorship in finance.

The rest of the paper is structured as follows. The next section reviews the literature, while Section 3 outlines the methodology used. Section 4 provides the data and a preliminary analysis, and Section 5 reports the empirical results. Finally, the study's conclusions are presented in Section 6.

2. Motivation

There is no extensive work on collaboration between authors in finance. A quantitative theory to account for the effectiveness of collaboration has not yet been formulated. Measuring the extent of co-authorship requires the collection and analysis of data from published journal articles. Using this approach, we obtained quantitative co-authorship measurements to study the formation of the networks in the field of mathematical finance. Researchers have studied many aspects of co-authorship. In 1994, Alexander and Mabry evaluated financial journals based on their contributions to top-level financial research. They ranked the journals according to the number of citations of their papers found in financial journals and identified the 50 most frequently cited journals and authors. They found that the number of papers published annually affects the journal ranking, especially among the lower ranks.

An early attempt to identify the productivity of leading scholarly journals was by Klemkosky and Tuttle (1977). They identified the most productive institutions of published papers in finance and economics for a ten-year period and claimed that there is a significant relationship between academic institutions' research productivity and the quality of the institutions' graduate finance programs as rated by peers. They also noted that published research productivity is one of the important prerequisites for attaining peer recognition of a quality graduate program in finance. Zivney and Bertin (1992) studied the publications of doctorates in finance for a 25-year period and examined the efficacy of various hiring, promotion and tenure criteria in predicting future productivity. In contrast to previous studies, they suggested that the publication productivity of finance graduates is not increasing; finance graduates from different periods have similar lifetime productivity profiles. They also mentioned that only the top 10% of existing authors (top 5% of graduates) will be able to publish a paper in the area of finance.

Prior work from Niemi Jr (1987) documented the institutional contribution of financial journals. This researcher ranked institutions by their contribution to the finance literature for a ten-year period. He stated that leading centers of finance research expanded their publications because of the maturation that has taken place in higher education. This change in the ranking occurred because many universities improved their research performance during this period. An alternative approach was developed by Heck and Cooley (2008). They studied the contribution of authors and institutions to the *Journal of Finance* for a 60-year period and reported the most prolific authors and institutions. They categorized the institutions employing published authors and the institutions from which the authors graduated. They presented a summary of statistics on frequency distributions of authors and institutions. They observed that institutions with large faculties had an advantage in accumulating publications in the journal. Moreover, affiliation with smaller institutions could increase the probability to publish in the journal only if the productivity of the faculty were increased.

In the same framework, Hardin III, Liano, Chan, and Fok (2008) examined the research productivity of board members of the leading academic finance journals for a 15-year period. They found that the selection of the journals' editorial boards requires substantial research achievement, which is measured by appearances in journals. Their findings identified that editorial board members' publications are more likely to appear in journals where they serve as editorial board members. Moreover, appointment to multiple concurrent editorial boards requires more productivity in highest quality outlets than appointment to any single editorial board. Finally, they noted that quality papers are more likely to be found in the top-ranked journals. Among other studies, Currie and Pandher (2011) introduced an Active Scholar Assessment (ASA) model and found that active researchers (researchers that publish papers throughout the whole examined period) provide useful guidance to editorial boards for enhancing their journal ranking and thus raise the academic productivity in the field of finance. They argued that in contrast to citation-based rankings, their methodology provided significant evidence of potential use for: 1) authors to evaluate the strategic placement of their research, 2) tenure and promotion committees to facilitate assessment of research achievement, and 3) university libraries to better manage their journal resources.

A subsequent study from Chan, Chang, and Chang (2013) ranked finance journals based on a database of citations for a 20-year period. They collected the names of the authors of each paper and their institutional affiliations. They measured the influence of each paper in a set of finance journals and showed that papers of top leading journals had low impact, while some papers from non-premier journals had high impact. Avkiran (2012) also studied the impact of collaboration in academic finance literature. This researcher focused on whether and to what extent collaboration leads to high quality papers. The researcher found that collaboration does lead to papers of higher impact but that there is no significant evidence of impact for papers with more than three authors. In addition, high-impact authors are not correlated with high-impact papers. Collaboration and the average author impact of high-impact papers are positively associated when papers with more than one author have higher mean author impact, contrary to single-author papers. Lastly, collaboration between authors of high-impact papers is based on cross-institutional studies.

Numerous studies in recent years have focused on productivity in collaboration among finance institutions. Chen and Huang (2007) introduced an Author Affiliation Index (AAI) model that calculated the ratio of papers authored by faculty at the world's top 80 finance schools to the total number of papers by all authors. They ranked finance journals and found that collaboration appears only in top-tier and near-top-tier journals. In addition, papers in lower-tier journals by researchers of elite schools are driven by their co-authors. However, collaboration between the top 80 programs is more common in top-tier journals, while collaboration between researchers of the top 80 and other programs is more prevalent in lower-ranked journals. They also noted that co-authorship between faculty in elite and non-elite