

Trends in Multi-Authored Papers in Economics

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Several decades ago, the overwhelming majority of papers appearing in leading journals of economics had a single author. In 1950, for example, only 6 percent of the papers published in the *Journal of Political Economy*, and just 8 percent of the papers published in the *American Economic Review*, were written by more than one author. These figures have changed dramatically. By 1993, the proportion of multi-authored papers in these two journals had risen to 39.6 percent and 54.9 percent, respectively. These figures are illustrative of a general trend, as this paper will show by examining the publishing trends in eight leading journals. The paper will then consider some possible reasons for this trend and its possible consequences.

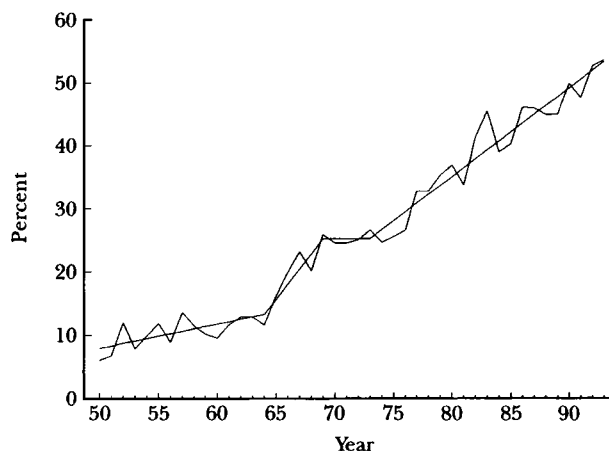
The Trend of Multi-Authorship over Time

To illustrate the trend in multi-authorship, I will focus on eight leading journals: *American Economic Review*, *Economic Journal*, *Econometrica*, *Review of Economics and Statistics*, *Review of Economic Studies*, *Journal of Political Economy*, *Quarterly Journal of Economics* and *Economica*. These eight journals were all well established in 1950 and remain important or “core journals” today (Laband and Piette, 1994; Diamond, 1989). They represent a mix of generalist and more quantitative journals as well as American and British journals.¹ The data are annual and cover the period 1950–1993.

¹ There are no non-British but European journals in the list, as there were no such journals in 1950 that remain “core journals,” as defined by Diamond (1989), today.

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Figure 1
Multi-Authorship in Eight Leading Journals



The jagged line in Figure 1 shows the proportion of multi-authored papers in all eight journals. It confirms that there has been a steady and substantial increase in multiple authorship since 1950. This is found in all eight of the journals. In the period 1950–1965, the highest proportion of multi-authored articles for any of the eight journals was 15.6 percent (in *Econometrica*). In the period 1974–1993, the lowest proportion for any journal was 35.5 percent (*Economica*). Apparently, the economist of the early postwar years was typically a solitary worker, while the economists of today are much more inclined to hunt in packs of at least two.

To determine whether this increase has been steady or more spasmodic, we estimate a trend line broken into four segments. This is known as a “linear spline” technique; essentially, it involves a search procedure for whether or where the slope of the data line changes significantly. In this case, the search for the first join point ranged over the period 1955–1982; the second from 1959–1986; and the third from 1963–1990. This procedure found that the slope of the data changed significantly (at the 1 percent level) in 1965, 1970 and 1974.² The results are shown in Figure 1 as the smoother line with four segments. The empirical work indicates no significant trend in the data until 1965; a significant positive upward trend from 1965 until 1970; virtually no upward trend from 1970–74; and then again a significant upward trend between 1974 and the end of the data series in 1993. This pattern, with some slight variation in dates, is repeated in all eight journals. The increase in multi-authorship over time has been spasmodic rather than continuous, with the most

² If readers want further details on how these join points were calculated, or on any other aspect of the data and calculations described in this paper, I would be happy to provide it. For a general description of linear spline methods, the interested reader might begin with Johnston (1984, pp. 392–396).

Table 1
Proportion of Multi-Authored Papers

<i>Journal</i>	1950–1993	1950–1965	1966–1970	1970–74	1974–1993
All Eight Economics Journals	26.4%	10.9%	22.8%	25.1%	40.0%
Quantitative Journals	30.8%	13.8%	30.8%	33.2%	44.2%
British Journals	24.5%	9.4%	20.2%	23.0%	37.6%
American Generalist Journals	25.5%	10.4%	20.0%	21.7%	39.5%
<i>Economic History Review</i>	7.8%	4.0%	5.4%	6.2%	11.7%

rapid rise occurring in the period 1965–1970 and a further substantial and prolonged rise in the period since 1974.

Potential Reasons for the Rising Trend in Multi-Authorship

The potential for useful collaboration has probably been increasing since the early 1950s for at least three reasons: the growth in the subject areas covered by economics; the increasingly technical nature of the discipline, on both the theoretical and the quantitative sides; and the growth in the size of the profession from which suitable collaborators can be found. Thus, even as it has become more difficult for one individual to cover the whole of the subject, a greater range of collaborators are available. A typical “core journal” paper in economics at the present time tends to display at least two of the following three characteristics: a good and/or novel idea; high-powered theoretical/mathematical analysis; or high-powered empirical/econometric analysis. Many papers satisfy all three of these criteria. An increased emphasis on analysis, whether theoretical or empirical, has come about partly because of advances in economic knowledge and partly because developments in computer hardware and software make projects feasible for a small group of researchers that would not have been feasible 30 years ago.

Evidence for this view comes from Table 1, which offers some more detailed information about multi-authored papers at the eight journals considered here. The first row of Table 1 offers overall figures for multi-authored papers. The second row shows that multi-authorship is more prevalent in the more quantitative journals, by which I mean the *Review of Economics and Statistics* and *Econometrica*, particularly the former. Until 1970, these two journals were ranked first and second in terms of the proportion of multi-authored papers. This has also been the case since 1974, although *Econometrica* has moved back to the pack, while the *Review of Economics and Statistics* retains easily the highest proportion of multi-authored papers.

The probable increase in the likelihood of finding suitable collaborators has occurred because of the growth in the size of the profession (Lovell, 1973). Departments of economics are bigger than they used to be, and there are more of them. Technological developments such as direct dialing, the floppy disk, word processing packages, fax and e-mail have increased the ease of collaborating with colleagues in other departments and other countries. It appears reasonable to suppose that the more individuals an economist has to choose from as potential collaborators, the greater is the probability of finding someone with whom to strike up an effective working relationship, although at the same time this may have also made the screening process more complex.

Because the number of economists in the United States is greater than in the United Kingdom and individual departments are bigger, one would expect that U.S. journals would exhibit a greater tendency to multi-authored papers, although it should be noted that there has been an increasing trend over the years for British journals to publish American-authored papers. Limited evidence for this can be found in the third row of Table 1, which shows multiple-authorship slightly lower in the three British-based journals (*Economica*, *Economic Journal* and the *Review of Economic Studies*) than in the American generalist journals, particularly since 1974, although prior to that date the picture is more mixed.

Much of this discussion has emphasized the importance of technological factors in explaining the growth of multiple authorship. Evidence for this conclusion lies not just with greater incidence of multiple authorship in quantitative journals, but with the uneven nature of the increase in multi-authored papers. The two critical periods—the mid-1960s and the period since the mid-1970s—approximately coincide with two major technical developments. The early 1960s saw the mainframe computer become established as an important tool for quantitative economic research with TSP, the first major econometrics software package, becoming available in 1967. The mid-1970s and later saw the introduction of the personal computer, with 1977 marking the launch of both the Apple II and the Commodore Pet, and 1981, the IBM PC. Since then, developments have centered around the speed and memory size of personal computers, together with an enormous growth of sophisticated software and a communications revolution.

Further support for the technical explanation for the growth of multiple authorship is given by the much more modest rise in multi-authorship in the *Economic History Review*, as can be seen from the final row of Table 1. Economic history is clearly less quantitative and technical than economics as a whole. The onset of the mainframe in the 1960s made little impact on the study of economic history, as initially did the introduction of the personal computer. Since then, it is possible that the impact of new technology in improving the ease with which people can work together is to some extent the explanation for the slight increase in multiple authorship we have witnessed in this area.

The link with increasingly sophisticated econometric techniques has also been made by Figlio (1994) in explaining the growth of empirical papers, particularly in “top journals.” This growth is itself likely to be linked with the proliferation of

multi-authored papers. However, it would be a mistake to lean too heavily on technological developments to explain all of the changing patterns in multi-authorship that we have found. In particular, the 1974 join point seems too early to be accounted for by the advent of the personal computer. One alternative explanation is that the chaotic nature of economic events in the 1970s helped break down former walls of specialization between colleagues and encouraged a burst of collaborative work, with new personal computer technologies continuing this trend into the 1980s and beyond. It is also conceivable that the possible tendency of some grant-giving agencies to favor collaborative research may also have been a significant factor in explaining the growth of multi-authored papers.

Discussion

From the view of the profession as a whole, is the growth of multi-authored papers a good thing? The answer will in part depend upon the motivation for the collaboration.

The major gain possible from collaborative work is that it allows for an efficient division of labor. For example, an economist working for a government statistical agency might combine with a mathematical economist and a labor economist in academia to write a quantitative paper on job search that none could have written on their own. The gains from collaborative work might result either from harnessing skill complementarities or from a sort of synergy where multiple contributors develop ideas that none would have developed on his or her own. Synergy differs from skill complementarity, in the sense that it can exist between individuals with very similar skill sets. When collaborative work draws upon such complementarities and synergies, it is most likely to represent a gain in knowledge to the economics' profession.

However, there must also be disadvantages to collaboration—otherwise all economics papers would be collaborative, and the number of collaborators would be very large. These disadvantages would appear to be threefold.

First, collaborative work involves compromise. An individual author working with a group will have to agree to a certain approach, certain text, even certain conclusions that that person might not enunciate in the same way if working alone. Because multiple authorship inevitably involves compromise, my own intuition is that it tends to reduce risk taking in academic papers. The result may be more technically proficient papers than in the past, but at the cost of the imaginative leap forward that starts economics in a new direction or gives fresh impetus to an old subject area. At an extreme, a multi-authored paper may be somewhat more likely to end up as a patchwork of text lacking a direction or theme. This may not be too much of a problem with just two authors, but if the number of authors grows to the totals often seen in medical journals, one might expect to see a growth in impenetrable prose and confused arguments.

Second, multi-authored papers impose costs of organization and communication that may lead to diseconomies of scale. These are probably greater if all the

collaborators are equally involved with all parts of the research and all parts of the paper. Developments in technology in recent years may have reduced the threshold at which these problems occur, but at some level they surely continue to exist.

Finally, any net advantage of collaboration may disappear altogether if some individuals combine even though the sum of what each could achieve working alone exceeds their combined efforts. This may occur if an economist can achieve a greater gain in academic reputation from multi-authored rather than single-authored papers. This would be true, for example, if the reputation gain from two coauthored papers exceeded the gain from one single-authored paper (holding quality of journal of publication and other things equal). In this situation, there would clearly be a professional incentive for individuals to combine, despite the possibility that their combined publications may have less value than the sum of what each would produce on their own. If professional rewards tend to favor a lengthy curriculum vitae—and it is arguable that this has increasingly been the case in recent years in both the United States and the United Kingdom—then collaborative work may be undertaken under pressure for quantity rather than quality. The actual discount rate that the profession applies to a multi-authored paper as opposed to a single-authored paper is a subjective notion, and one that is difficult to quantify other than by asking what economists feel about certain papers and individuals. But it is my impression that at least for work done with only one or two coauthors, an equivalent number of multi-author papers do count for more than one single-authored paper.

Given the development of the subject of economics and the new technological possibilities, a certain increase in the number of multi-authored papers in the field of economics was probably inevitable. But it is reasonable to question whether this trend has gone too far, and whether it is continuing for reasons that are socially productive for the economics profession.

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