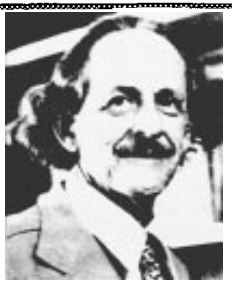

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Journal Citation Studies. 50. Part 2. Most-Cited Economics Papers and Current Research Fronts

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In the first part of this two-part study, Arthur M. Diamond, Jr., professor of economics, University of Nebraska, Omaha, reviewed the core-journal literature of economics.[1] In this part he surveys the most-cited papers from the 27 core journals and the most active economics research fronts of 1987.

In Part 1 Diamond mentioned the increasing mathematization of the economics profession since the end of World War II. Quantitative analysis has certainly become a hallmark of economics, as it has for many other fields. One of these other fields—a relatively young one compared to economics—is scientometrics, which uses quantitative techniques to describe and analyze the structure and process of science. Given their joint interests, it is perhaps not surprising that a number of economists and scientometricians have turned the tools of quantitative analysis onto economics itself, to identify not only core journals, but also classic papers and active specialties, as Diamond has done in this essay.

In this regard I should mention the intriguing work of Katherine W. McCain, College of Information Studies, Drexel University, Philadelphia, who has in two studies used author co-citation and multidimensional scaling to depict the various intellectual schools in economics and their change over time.[2,3] I recommend this pair of articles be read in conjunction with Diamond's two-part study for a full and fascinating overview of recent trends in economics.

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Most-Cited Economics Papers and Current Research Fronts

Arthur M. Diamond, Jr.
Department of Economics
University of Nebraska
Omaha, Nebraska 68182

September 22, 1988

Part 1 examined the 27 core journals of economics, the journals they most frequently cited, and the journals that most frequently cited them. In this, the final installment of our study, the focus is on the most-cited paper from each of the 27 core journals and on the 1987 research fronts, or specialty areas, in which articles from core journals were well represented. The most-cited article from a core journal is Ronald H. Coase's "The problem of social cost." Something of an anomaly, Coase eschews the highly mathematical tools of most modern economists. The most active 1987 research front concerns macroeconomic problems of unemployment and the business cycle, with heavy reference to the rational expectations literature.

In Part 1 of this study, the focus was on the most significant journals in economics.[1] If, as Marshall McLuhan asserted, the medium is the message, then we might have stopped inquiry there. But most scientists, including economists, hope that there is much more to the message than the medium. This second part presents some of the papers that have been most important to the economics profession and identifies some of the important research fronts, or specialty areas, in economics that were most active as of 1987.

Most-Cited Papers from Core Journals

Table 1 lists the most-cited article for each of the 25 core journals that has at least one article cited 50 times or more. Five Nobel Prize winners appear among the list of authors: Robert M. Solow (1987), Massachusetts Institute of Technology (MIT), Cambridge;[2] Franco Modigliani (1985), also of MIT;[3] Gerard Debreu (1983), University of California, Berkeley;[4] George J. Stigler (1982), University of Chicago, Illinois;[5] and James Tobin (1981), Yale University, New Haven, Connecticut.[6] The citation superstar of the list is Ronald H. Coase. He is one of two authors to have two articles listed in the table. One of these, "The problem of social cost," written when he was at the University of Virginia, Charlottesville, is the most-cited article on the list—and by no small margin. Coase was born in 1910 in the UK and for most of his career he taught in the law and economics program at the University of Chicago Law School. Coase's work is unusual because it contains almost no mathematics or sophisticated statistical analysis. This may explain why economists seldom mention Coase as a candidate for the Nobel Prize when they speculate on future winners.

In his paper on social cost Coase examined situations in which property rights conflict, such as when the right of a railroad to run trains on its tracks conflicts with the right of a farmer to grow wheat on his land right next to the track. If sparks from the train were to ignite a fire in the wheat, then who should pay for the damage in order to ensure that the socially optimal number of trains are run and the socially optimal number of bushels of wheat are grown? Coase's surprising answer (now called the Coase Theorem) is that it does not matter: the social optimum will be achieved no matter who bears the cost for the fires.

Nobel laureate Stigler has said that when Coase first presented his argument at the home of a Chicago economist with all of the distinguished Chicago economists of the time present, everyone at first was absolutely convinced that Coase was dead wrong. By the end of the evening, everyone in the room had been convinced he was right. Stigler has described it as one of the most intellectually exciting evenings of his life.[7]

The second most-cited paper on the list, "Risk aversion in the small and in the large" by John W. Pratt, Harvard University, Cambridge, Massachusetts, offers a technical discussion of risk aversion and suggests a simple and appealing measure of risk aversion that makes use of tools that economists already employ to explain other aspects of human behavior. This measure was independently suggested by Nobel laureate Kenneth J. Arrow (1972, economics), also of Harvard University, and hence is sometimes called the Arrow-Pratt measure of risk aversion. Pratt's 1964 article has provided important tools for work in a research area that prospered in the 1970s and prospers still in the 1980s: decision making under uncertainty.

Articles published in core journals obviously do not only cite other core journals. Table 2 presents all articles published in noncore journals that were cited eight or more times in 1986 core-journal articles. Note that in terms of citations received in 1986, the articles on this list are much less distinguished than those in Table 1.

John C. Harsanyi, University of California, Berkeley, one of the leading game theorists of the last 30 years, can claim three entries on the list. Game theory continues to be of increasing interest to theorists in many subfields of economics. The most highly cited noncore article, however, is William F. Sharpe's "Capital asset prices: a theory of market equilibrium under conditions of risk." Sharpe, professor of finance, Stanford University, California, is sometimes identified as an efficient markets theorist.[8] Perhaps even better known as an efficient

markets theorist is Eugene F. Fama, finance professor, University of Chicago, who is the only person other than Tobin to have an article appear on both the list of highly cited core articles and the list of highly cited non-core articles. The hypothesis that Sharpe and Fama defend states that stock market prices quickly incorporate any publicly available information. One implication that is sometimes drawn from the hypothesis is that only those who are lucky or who have inside information will make money on the stock market. Many market analysts viewed the October 1987 stock market crash as a serious blow not only for many speculators, but also for Sharpe and Fama's hypothesis.[9]

Most Active Economics Specialties

Economists and observers of economics would often like independent confirmation

Table 1: The most-cited article from each core economics journal cited at least 50 times in the *SSCI®*, 1966-1986. Articles are listed in alphabetic order by first author. A = 1966-1986 citations. B = 1987 citations. *SCI®/SSCI* research-front numbers for 1985, 1986, and 1987 also follow the reference.

A	Bibliographic Data	B
55	**Ahluwalia M S.** Inequality, poverty and development. *J. Develop. Econ.* 3:307-42, 1976. 85-0316, 86-0240	5
319	**Akerlof G A.** The market for "lemons": quality uncertainty and the market mechanism. *Quart. J. Econ.* 84:488-500, 1970. 85-0379	47
264	**Barro R J.** Rational expectations and role of monetary policy. *J. Monetary Econ.* 2:1-32, 1976. 85-1436, 86-1840, 87-0106	23
139	**Barten A P.** Maximum likelihood estimation of a complete system of demand equations. *Eur. Econ. Rev.* 1:7-73, 1969. 85-1863, 86-0289, 87-0607	16
180	**Blinder A S & Solow R M.** Does fiscal policy matter? *J. Public Econ.* 2:319-37, 1973.	6
349	**Coase R H.** The nature of the firm. *Economica* 4:386-405, 1937. 85-0454, 86-4224, 87-0489	52
1,005	**Coase R H.** The problem of social cost. *J. Law Econ.* 3:1-44, 1960. 86-0665	2
56	**Debreu G.** Excess demand functions. *J. Math. Econ.* 1:15-21, 1974.	1
249	**Fama E F, Fisher L, Jensen M C & Roll R.** The adjustment of stock prices to new information. *Int. Econ. Rev.* 10:1-21, 1969. 85-3369, 86-1700, 87-3399	28
201	**Greenwood M J.** Research on internal migration in the United States. *J. Econ. Lit.* 13:397-433, 1975. 85-1871, 86-3045, 87-2530	19
314	**Hotelling H.** Stability in competition. *Econ. J.* 39:41-57, 1929. 85-4581, 86-2455, 87-3158	29
536	**Jensen M C & Meckling W H.** Theory of the firm: managerial behavior, agency costs and ownership structure. *J. Finan. Econ.* 3:305-60, 1976. 85-0454, 86-1272, 87-0489	108
64	**Kravis I B & Lipsey R E.** Price behavior in the light of balance of payments theories. *J. Int. Econ.* 8:193-246, 1978. 86-6789	7
606	**Lintner J.** The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets. *Rev. Econ. Statist.* 47:13-37, 1965. 85-1700, 86-1700	29
355	**Lucas R E.** Expectations and the neutrality of money. *J. Econ. Theor.* 4:103-24, 1972. 85-1436, 86-1840, 87-0106	25
562	**Modigliani F & Miller M H.** The cost of capital, corporation finance and the theory of investment. *Amer. Econ. Rev.* 48:261-97, 1958. 85-1700, 86-1272, 87-0489	36
119	**Mundell R A.** Capital mobility and stabilization policy under fixed and flexible exchange rates. *Can. J. Econ. Polit. Sci.* 29:475-85, 1963. 86-6297	7
165	**Pierce D A & Haugh L D.** Causality in temporal systems. *J. Econometrics* 5:265-93, 1977. 85-5834, 86-1840, 87-0106	16
56	**Posner M V.** International trade and technical change. *Oxford Econ. Pap.—New Ser.* 13:323-41, 1961.	1
671	**Pratt J W.** Risk aversion in the small and in the large. *Econometrica* 32:122-36, 1964. 85-1198, 86-1188, 87-0556	34
172	**Sargent T J.** Rational expectations, the real rate of interest, and the natural rate of unemployment. *Brookings Pap. Econ. Activ.* 2:429-72, 1973.	7
478	**Stigler G J.** The theory of economic regulation. *Bell J. Econ. Manage. Sci.* 2:3-21, 1971. 85-8019, 86-2117, 87-2117	61
607	**Tiebout C M.** A pure theory of local expenditures. *J. Polit. Econ.* 64:416-24, 1956. 85-2349, 87-7967	37
533	**Tobin J.** Liquidity preference as behavior towards risk. *Rev. Econ. Stud.* 25:65-86, 1958. 85-1997, 86-2014	21
136	**Tullock G.** The welfare costs of tariffs, monopolies, and theft. *West. Econ. J.* 5:224-32, 1967. 85-2503, 86-2493, 87-6449	14

about the topics that are (and those that are not) the focus of current research. Some economists may wish to identify such areas in order to participate in them, and others, to avoid them. Table 3 identifies eight major research fronts, or specialty areas, in economics during 1987. To identify a research front, highly cited articles are first identified and then co-citation analysis is used to determine which articles tend to be cited together by other articles. Articles that are co-cited frequently enough are grouped into clusters of core documents that ISI® calls "research fronts." In order to appear in Table 3, a research front must have been cited by 50 or more articles published in core journals in 1987. Column A in the table tells the number of articles from core journals

Table 2: Highly cited articles published in noncore journals cited at least eight times by core economics journals in the 1986 *SSCI®*. Articles are listed in alphabetic order by first author. A = 1986 citations from core journals. B = total 1966-1986 *SSCI* citations. An asterisk (*) indicates that the paper was the subject of a *Citation Classic®* commentary. The issue, year, and edition of *Current Contents®* in which the commentary appeared follow the bibliographic reference. *SCI®*/*SSCI* research-front numbers for 1985, 1986, and 1987 also follow the reference.

A	B	Bibliographic Data
15	145	**Berndt E K, Hall B H, Hall R E & Hausman J A.** Estimation and inference in nonlinear structural models. *Ann. Econ. Soc. Meas.* 3:653-65, 1974.
8	120	**Carlson J A.** A study of price forecasts. *Ann. Econ. Soc. Meas.* 6:27-56, 1977.
8	616	**Fama E F.** Efficient capital markets: a review of theory and empirical work. *J. Finan.* 25:383-417, 1970. 86-5376, 87-0906
12	128	**Harsanyi J C.** Games with incomplete information played by "Bayesian" players. Part I. The basic model. *Manage. Sci.* 14:159-82, 1967. 85-0379, 86-4945
10	121	**Harsanyi J C.** Games with incomplete information played by "Bayesian" players. Part II. Bayesian equilibrium points. *Manage. Sci.* 14:320-34, 1968. 85-0379
11	122	**Harsanyi J C.** Games with incomplete information played by "Bayesian" players. Part III. The basic probability distribution of the game. *Manage. Sci.* 14:486-502, 1968. 85-0379, 86-4945
9	200	**Heckman J J.** The common structure of statistical models of truncation, sample selection and limited dependent variables and a simple estimator for such models. *Ann. Econ. Soc. Meas.* 5:475-92, 1976. 85-2353, 86-0740, 87-5130
8	66	**McCallum B T.** Rational expectations and macroeconomic stabilization policy: an overview. *J. Money Credit Banking* 12:716-46, 1980. 86-1840
17	147	**Selten R.** Reexamination of the perfectness concept for equilibrium points in extensive games. *Int. J. Game Theory* 4:25-55, 1975. 85-0379, 86-4311, 87-4929
10	868	***Sharpe W F.** Capital asset prices: a theory of market equilibrium under conditions of risk. *J. Finan.* 19:425-42, 1964. (33/79/S&BS) 85-1700, 86-1700, 87-1698
9	261	**Tobin J.** A general equilibrium approach to monetary theory. *J. Money Credit Banking* 1:15-29, 1969. 86-4844
8	58	**Working H.** Statistical laws of family expenditure. *J. Amer. Statist. Assn.* 38:43-56, 1943. 85-7248
16	566	***Zellner A.** An efficient method of estimating seemingly unrelated regressions and tests for aggregation bias. *J. Amer. Statist. Assn.* 57:348-68, 1962. (38/82/S&BS) 85-1863

Table 3: The 1987 *SCI®*/*SSCI®* research fronts that include at least 50 citing documents published in the core economics journals. A = number of articles from core economics journals citing the core of each front. B = total number of citing documents. C = total number of core documents.

Number	Name	A	B	C
87-0106	Business-cycle relationships and causality of unemployment	141	328	40
87-0489	Corporate governance, capital structure, and investment/finance decisions	107	434	42
87-0607	Structural and equilibrium modeling and input-substitutions and demands	75	272	35
87-1844	Macroeconomic policy coordination and implications of cartels and profit sharing	101	196	27
87-1845	Government investment, government debt, capital accumulation, and fiscal policy	60	118	10
87-3158	Monopolistic competition and stability of industrial competition	66	115	19
87-4929	Bargaining theory involving collective, bilateral, sequential, and incomplete information bargaining	76	123	11
87-5130	Union-nonunion wage differentials	52	146	6

Table 4: The 1986 *SCI*®/*SSCI*® research fronts that include at least 70 citing documents published in the core economics journals. A = number of articles from core economics journals citing the core of each front. B = total number of citing documents. C = total number of core documents.

Number	Name	A	B	C
86-1700	Security market and stock price valuation models, asset pricing, and equilibrium returns	116	354	38
86-1840	Tests of short-run neutrality and nonnested tests of economic models, monetary aggregates, and stabilization policies	108	330	30
86-1243	Models of trade-union behavior, impact of strikes, and effects of market power	104	254	32
86-4311	Effects of complete and incomplete information on pricing, demand, and market entry	94	182	15
86-2455	Role of spatial competition and imperfect information in intraindustry trade	82	197	26
86-4437	Unit roots in time-series models, empirical testing, and other methods of econometric analysis	81	216	16
86-0289	Factor demand and substitution, technical efficiency, and measures of long-run productivity	79	231	34
86-1841	Government borrowing and public debt and regulation of, and discretion in, monetary policy	73	153	14

that were citing the core papers or books. (To avoid confusion, the reader should notice that "core" is used in two ways in this discussion. Some journals are "core journals" relative to all other journals. Similarly, when discussing a research front, some articles in the front are "core documents" relative to other articles in the front.) If one believes that what is being written in the core journals matters more than what is being written elsewhere, then the figure in column A would be the most important measure of activity in a research front. If one wanted to see how active a research front was across the whole profession, then it is column B, which provides the total number of articles from all sources that cite the research front's core documents, that will be most enlightening.

It is interesting to note that the eight most active research fronts in 1987 appear to have almost no overlap with the eight most active research fronts in 1986 (see Table 4). The only major exception appears to be that both periods have a research front that focuses on the public debt. Union behavior was also the topic of a research front in each period. But in 1986 the focus of attention was the impact of strikes and the effects of a union's market power, while in 1987 the focus was more narrowly on how to measure union-nonunion wage differentials.

Four of the most active 1987 research fronts are in macroeconomics, two are in economic theory, and one each is in finance, industrial organization, and labor economics.[10] This list of active fields is broadly consistent with other evidence of what fields are most active in economics today. Noticeably absent from the list are international economics, development, agricultural economics, economic history, and history of economic thought.

The most active research front, in terms of the number of articles citing the front's core literature, is #87-0106, "Business-cycle relationships and causality of unemployment." This topic has commanded the attention of some of the profession's best minds for much of this century, including Keynes, Samuelson, and Friedman. The stakes are high for finding out what causes business cycles, because such knowledge may reduce the severity of unemployment and inflation. To the occasional embarrassment of the profession, economists still have not reached a consensus on these issues. A more detailed look at the research front reveals that the 40 core documents in the front include many articles whose first authors are leaders of what is sometimes called the rational expectations school. For example, among the 40 core documents are 5 by Robert E. Lucas, University of Chicago; 3 by Robert J. Barro, formerly at the University of Chicago and the University of Rochester, New York, but recently at Harvard; and 2 by Thomas J. Sargent, formerly at the

University of Minnesota, Minneapolis, but now at the Hoover Institution on War, Revolution, and Peace, Stanford, California.

Articles by opponents of the rational expectations school also appear on the list. Two articles by Alan S. Blinder, Princeton University, New Jersey, represent the most notable examples. The names of opponents of rational expectations do not appear as frequently among the core documents, nor are they so frequently cited when they do appear. Nobel laureate and staunch monetarist Milton Friedman once startled his listeners by suggesting that all economists were now Keynesians. What he meant was that the vast majority of macroeconomists had accepted many of the analytic tools that had been developed during the Keynesian revolution, regardless of whether they accepted all of Keynes's prescriptions for the economy. We may now be witnessing a time when the vast majority of macroeconomists are rational expectations theorists in the same sense that Friedman is a Keynesian.

* * * * *

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