

Current Comments®

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Who Will Win the Nobel Prize in Economics? Here's a Forecast Based on Citation Indicators

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Speculations on who will win the Nobel Prize have appeared in the popular press. *The Scientist*®'s success in forecasting the 1989 prize in physiology or medicine is discussed, as is the correlation between citations, receipt of Nobel Prizes and other prestigious awards, and subjective expert judgment. Based on *primary* author data in the 1966-1986 *Social Sciences Citation Index*®, the 50 most-cited economists "of Nobel class" are identified and compared with peer judgments.

Forecasting the Nobel Prizes

Recently, the newspaper *The Scientist*® published a list naming 20 researchers who, it predicted, were "of Nobel class" and most likely to win the prize in physiology or medicine.¹ About two weeks later, the 1989 award was announced and, as it happened, two scientists on the list were selected by the Nobel committee: J. Michael Bishop and Harold E. Varmus, both of the University of California, San Francisco.

What was the secret of *The Scientist*'s success in forecasting the prize—"inside information," expert informants, or just dumb luck? It was none of these. Long ago it was demonstrated that scientists who win Nobel Prizes are typically *highly cited*—about 30 times more often than the average scientist.² For example, in 1968 ISI® compiled a list of the 50 most-cited scientists in the 1967 *Science Citation Index*®.³ The list included six scientists who had already won the Nobel Prize and six more who were awarded the prize in later years.

In addition to citation data, it is well known that many Nobel Prize winners in physiology or medicine have previously garnered other awards that have proven to

be fairly accurate indicators of Nobel stature. The Lasker Award and the Gairdner Award are two of these so-called Nobel predictor prizes. Further, prizewinning capacity and big citation tallies have been found to be highly correlated.⁴

So, *The Scientist* used as its selection criteria exceedingly high citation counts (picking names from a list of the 500 most-cited scientists of 1973-1984), receipt of Nobel precursor prizes, and preferably both, to formulate its list of 20 scientists who are "of Nobel class" and likely to become laureates in future years.

The only surprise was how quickly this prediction came true.

Picking Winners in Economics

With the awarding last October of the 1989 Alfred Nobel Memorial Prize in economic sciences to University of Oslo, Norway, professor Trygve Haavelmo, the Nobel committee paid tribute to a pioneer of the use of statistical probability in economic analysis. In 1941 Haavelmo wrote a doctoral dissertation at Harvard University, Cambridge, Massachusetts, entitled "The Probability Approach in Econometrics." The

Nobel committee's citation singled out this work, which, it stated, "had a swift and pathbreaking influence on the development of econometrics."⁵

Published in the journal *Econometrica* in 1944, the thesis laid out what has become the scientific foundation for testing economic theories and building accurate models.⁶ Those more accurate models have, in turn, made economic forecasts more accurate.

A few days after the announcement of Haavelmo's prize, I read a brief article in the *New York Times* on speculations that had taken place before the new Nobelist was named.⁷ Noting that few economists would have predicted Haavelmo's selection and that many did not even recognize his name, the writer, Peter Passell, offered up an array of opinions on who might win this year's prize in economics.

"Here is the morning line," he wrote, "unscientifically culled from a dozen phone chats with economists who, sensibly, prefer to remain nameless." The names he listed, in order, were Gary S. Becker of the University of Chicago, Illinois; Robert E. Lucas, also of the University of Chicago; Joseph E. Stiglitz of Stanford University, California; Ronald H. Coase, emeritus at the University of Chicago; Richard A. Musgrave, emeritus at Harvard; and French economist Edmond Malinvaud, Collège de France, Paris.

He also mentioned "safe choices," a group he characterized as "prolific economists at the top of their specialties." His "nonexhaustive" list included Jagdish N. Bhagwati of Columbia University, New York; Peter A. Diamond of the Massachusetts Institute of Technology, Cambridge; Martin Feldstein of Harvard; Robert E. Hall of the Hoover Institution at Stanford; Dale W. Jorgenson of Harvard; and Edwin S. Phelps of Columbia.

Passell also spoke to David Romer, an economist at the University of California, Berkeley, who has been polling economists for the last seven years on who will win the

next Nobel Prize. Romer gave Passell the names of Becker and Malinvaud, he said in a recent telephone interview.⁸

ISI's Basis of Forecasting the Prize

Passell concluded his article with a question: "Have a better idea of who will win? Perhaps you could make a little money on it. David Romer's straw poll is actually a pool. If a long shot like Trygve Haavelmo were to win next year, a strategically placed dollar bet might return 40 or 50."⁷

Well, to answer Passell's question, I think ISI does have as good an idea, if not a better one, of who will win the Nobel Prize in economic sciences in the coming years. It is based on the citation files of ISI's *Social Sciences Citation Index*[®] (*SSCI*[®]). We recently drew up a list of 50 authors who were most cited in the *SSCI* during the years 1966-1986.

In order to identify highly cited *economists* among the myriad social scientists whose works are cited in the *SSCI*, we employed the following methodology. First, we isolated all papers cited 50 or more times, 1966-1986, that were published in 27 "core" economics journals. These core journals had been listed in a previous essay.⁹

Second, we made a list of all the *primary* authors of these papers and tabulated citations for each. The decision to limit the list to first authors was a temporary expedient—the database we used, in fact, was organized by primary author only, and expanding it to include all authors would have required considerably more time and expense. In future essays we hope to use all-author data to identify the most-cited *SSCI* economists, especially since we've extended the *SSCI* back through 1956.¹⁰ The list of names was then ranked by total citations.

Third, using this ranked list of names, we consulted another ISI file that shows, again

by primary authors' names, all works—including books as well as papers—that were cited 10 or more times during this same period, 1966-1986, and totaled the citations for each author.

Finally, the names of some three dozen economists (including Nobel laureates) who had not been previously identified in step two, but who were suggested by reviewers to be highly cited, were checked and their citations counted. Once again, the list was ordered by total citations.

The result of this work, which entailed a herculean tabulation effort, appears in Table 1.

I should mention that, after our work was completed, we became aware of a recently published list of 150 economists ranked by citations for the period 1971-1985.¹¹ The origin of these data is the *SSCI* and the citation data are primary author counts. The author, Marshall H. Medoff, California State University, Long Beach, restricted himself to tabulating citation counts for economists at US universities who were under 65 as of 1985 and who had not by then won the Nobel Prize. We made no such restrictions in our list. I encourage those interested to compare these two lists for their similarities and differences.

Nobel Class Economists

It is important to emphasize again that our list is based on *primary* author data—not all-author data. Citations to a paper or book with two or more authors were credited to the first author only. So, if an author has a habit of listing his or her name in other than first position, for whatever reason, that person would not be identified in this analysis.

Also, if an economist happens to be a secondary author on one or more highly cited works, that person would not, in this analysis, receive citation credit. That, some have suggested to us, is the reason why Stiglitz

Table 1: Most-cited economists in the *SSCI*®, 1966-1986, ranked by total primary author citations. A=rank. B=name. C=birth year-death year. D=total primary author citations. An asterisk (*) indicates a Nobel laureate. A dagger (†) indicates deceased.

A	B	C	D
1.	* Arrow K J	(1921)	7,807
2.	* Samuelson P A	(1915)	6,867
3.	* Simon H A	(1916)	5,894
4.	* Friedman M	(1912)	5,219
5.	Becker G S	(1930)	4,947
6.	Fama E F	(1939)	4,592
7.	Feldstein M	(1939)	4,512
8.	Theil H	(1924)	4,207
9.	* Stigler G J	(1911)	4,150
10.	Baumol W J	(1922)	4,053
11.	* Buchanan J M	(1919)	3,428
12.	Galbraith J K	(1908)	3,370
13.	* Tobin J	(1918)	3,214
14.	† Keynes J M	(1883-1946)	3,022
15.	* Modigliani F	(1918)	2,898
16.	Barro R J	(1944)	2,826
17.	† Robinson J	(1903-1983)	2,718
18.	*† Hicks J R	(1904-1989)	2,650
19.	Lucas R E	(1937)	2,615
20.	Sen A K	(1933)	2,584
21.	*† Myrdal G	(1898-1987)	2,477
22.	* Solow R M	(1924)	2,286
23.	Griliches Z	(1931)	2,260
24.	Sargent T J	(1943)	2,119
25.	Bowles S	(1939)	2,035
26.	† Hotelling H	(1895-1973)	2,015
27.	Mincer J	(1922)	2,004
28.	Coase R H	(1910)	1,950
29.	Nerlove M	(1933)	1,942
30.	* Debreu G	(1921)	1,931
31.	Jorgenson D W	(1933)	1,929
32.	Zellner A	(1927)	1,830
33.	* Schultz T W	(1902)	1,816
34.	Phelps E S	(1933)	1,815
35.	Black F	(1938)	1,714
36.	Stiglitz J E	(1942)	1,695
37.	Olson M	(1932)	1,662
38.	* Klein L R	(1920)	1,641
39.	Malinvaud E	(1923)	1,625
40.	† Lintner J	(1916-1984)	1,623
41.	Granger C W J	(1934)	1,604
42.	Jensen M C	(1939)	1,602
43.	Musgrave R A	(1910)	1,564
44.	Bhagwati J N	(1934)	1,561
45.	Alchian A A	(1914)	1,544
46.	Mansfield E	(1930)	1,503
47.	*† Kuznets S	(1901-1985)	1,502
48.	Chow G C	(1929)	1,483
49.	Hirshleifer J	(1925)	1,417
50.	Chenery H B	(1918)	1,382

appears in the bottom half of Table 1. Romer suggested that, because of our method, "you've probably collected fewer than half of his citations."⁸

Using primary author data is, of course, not the most exhaustive methodology. But an "all-author" study would have had its own limitations—namely, of excluding citations to books, since these are not covered in the *SSCI Source Index*. In order to know what names are listed as secondary authors on a work, ISI would have had to have indexed the work. To exclude citations to books would have lessened the influence of an important vehicle for the communication of ideas in economics, a vehicle much more important in the social sciences than in the life or physical sciences.

Another cautionary note: Table 1 is, we believe, a good listing of most-cited economists for the period 1966-1986, but we fully realize that it is not the ultimate list. Because our process of identifying highly cited economists was not exhaustive—we did not look up the name of every economist in the world—names might have been missed that do belong in the list. The relative rankings of those that do appear are accurate, however.

I should say that *ex post facto* checking of about three dozen or so names resulted in relatively few changes to the top 25. One was John Maynard Keynes, for example, who died in 1946. Keynes is the great economic figure of the twentieth century. The influence of his work is so pervasive that citation of his ideas and specific publications is deemed by many to be unnecessary, a phenomenon known as obliteration by incorporation.¹²

The appearance of Keynes in this list also gives me the opportunity to emphasize that his appearance as the 14th most-cited economist of this period most certainly does not mean that he was the 14th *best* economist of the period. We do not attribute increments of quality to absolute numbers of citations. His appearance so high in this list, as well as that of others in the top 20 or 25, merely indicates that *all* have had a great impact, as is reflected by the frequent citation of their works.

Plainly, some of the names—such as those of Becker and Lucas—are on everyone's list of potential prizewinners. Both names appear in the top 20. What I find remarkable is that every name in Passell's article, with the exception of two and those he calls "dark horses," appears in this automatically generated list. The two that do not, Diamond and Hall, are ranked 53d and 56th, respectively. Citation data do agree with subjective opinion to some extent, and they have been shown to correlate with subjective judgments of influence, significance, and prestige. But to find *nearly all* the names suggested by "inside experts" on the ISI list of the 50 most-cited economists of 1966-1986 is indeed remarkable.

Romer told an interesting story that I have his permission to repeat. He said that he was talking to a colleague about our exercise, and the colleague said, "I think they [the Nobel committee] should just give it to the guy with the most citations." Romer said he started to put up some objections about how citations are imperfect, when his colleague cut him off with "...yes, but this would have a much better track record than the Nobel committee has had."⁸

Is Haavelmo an Exception to the Citation Rule?

Careful readers will have noticed in Table 1 that Haavelmo's name is not on the list. His total citations, calculated the same way, number 237. Does Haavelmo's selection disprove the point advanced here—that citations are accurate indicators of Nobel stature? I don't think so. The Nobel Prize in economic sciences was initiated only some 21 years ago, in 1969. There is a large "backlog" of pioneering economists who made their seminal contributions during the 1940s and 1950s, and some even before that, who are still alive and therefore eligible for recognition by the Nobel committee.

Some have said the committee is in a race against time to recognize this older genera-

tion of Nobel class economists. When the backlog is cleared, by prize-giving or by death, it is expected that the annual prize in economics will go to more contemporary figures. Haavelmo is of that older generation. His ideas had already become well incorporated into the fabric of economics during the period we examined (1966-1986); therefore, explicit citations to his works were relatively few.

Rather, the individuals listed in Table 1—if they have not died and have not already won the prize—are potential winners in future years. The probability of winning the Nobel Prize for these economists is, if the past is any indication, very good.

As I noted earlier, we hope to perform an all-author citation analysis of most-cited economists. It will then be interesting to dis-

cover how a list generated using that method would compare with Table 1. With these two we would be in a good position to draw up a list of most-cited papers and books in economics. In the meanwhile Clive Crook, the economics correspondent for the *Economist* of London, tells us he is planning a multipart series that uses these data as its departure point.¹³ I am looking forward to his articles on these highly cited, Nobel class economists.

* * * * *

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