

Estimating the Economics Nobel Prize Laureates' Achievement from their Fame

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Abstract

This paper estimates the achievement of Nobel Prize winners in Economics according to a simple model which exponentially relates fame to achievement. Based on Google hits, Paul Krugman, Joseph Stiglitz and Milton Friedman turn out to be the top-three economists that achieved most.

1. Introduction

Fame – the state of being widely known – is gained by great achievements. If you ask a casual by-passer who is the most *famous* physicist, without a shadow of a doubt, the majority of people will spontaneously think of Albert Einstein (1879-1955). If you rephrase the question by asking which scientist *achieved* most in physics, the answer of many will be the same. Einstein got this fame because of his contributions to relativity theory and theoretical physics. His achievements were rewarded with a Nobel prize (1921) and led to his worldwide fame. For social sciences, such as economics, however, it is less clear cut which scientist achieved most. Typically rankings of achievement amongst economists are composed based on the number of publications or citations. An example is the summary list at <http://ideas.repec.org/top/> which uses RePEc data. This paper looks at this issue from a different angle by applying the methodology suggested by Simkin and Roychowdhury (2011) to the economists that won the Nobel Prize. According to Simkin and Roychowdhury's approach, Paul Krugman is the economist who achieved most among his fellow Nobel Prize Winners. Further, the top-10 is populated by Joseph Stiglitz, Milton Friedman, Amartya Sen, John Nash, Peter Diamond, Daniel Kahneman, Paul Samuelson, James Buchanan and Elinor Ostrom. The least fortunate turns out to be Trygve Haavelmo who obtained a Nobel Prize for clarifying the probability theory foundations of econometrics and for his analyses of simultaneous economic structures.

2. Methodology

The econometric relationship between achievement and fame is not obvious. Simkin and Roychowdhury (2006) studied this relationship in a straightforward case: the fighter pilots of the First World War ("the aces"). They measured the achievement of these war heroes by the number of their victories (i.e. the number of planes they shot down). Following the suggestion of Schulman (1999), their fame was proxied by the number of hits each war hero got on a web

based search engine such as Google¹. Google hits can be thought of as relatively independent observations of “a crowd of people” (see Surowiecki (2004)).

A scatter plot of the Google hits versus the number of victories revealed a nonlinear relationship. The marginal impact on Google hits of every extra plane shot, turned out to increase. In order to capture this nonlinearity they conjectured an exponential relationship between fame, F , (i.e. the number of Google hits) and achievement, A , (the number of planes shot down):

$$F = ce^{\beta A} \quad (1)$$

Non linear least squares estimated c at 5.3 and β to be about 0.72. Their crucial finding is not that Google hits are in any way the preferred yardstick for measuring achievement, but the fact that they found empirical evidence that fame is exponentially related to achievement.

Turning the question upside down, Simkin and Roychowdhury (2011) wanted to estimate achievement from fame. Sticking to their proxy of fame, i.e. the number of Google hits, they estimated the achievement of 45 physicists that won a Nobel Prize before the Second World War. By reconciling the list of names with other rankings, they concluded that their method was an acceptable methodology to infer achievement from fame.

The Simkin and Roychowdhury (2011) procedure assumes equation (1) to hold as a definition relationship. From (1) we know that the achievement of Nobel Prize winner j , can be written as:

$$A_j = \frac{1}{\beta} \ln\left(\frac{F_j}{c}\right) \quad (2)$$

Unfortunately, β and c are unknown. However, by scaling the achievement of every economists by the maximum achievement reached by any economist in the list, A_{max} , the value of β becomes irrelevant since it cancels out of the achievement ratio:

$$\frac{A_j}{A_{max}} = \frac{\ln\left(\frac{F_j}{c}\right)}{\ln\left(\frac{F_{max}}{c}\right)} \quad (3)$$

¹ With a wink of the eye, Schulman and Boissier (1999) consider Google the best choice of a search engine since it respects their intuition about the ranking of the fame of a set of well-known individuals. Undoubtedly being Beatles fans, Schulman and Boissier (2001) even invoke the Lennon Theorem (1966) which states that the Beatles are more popular than Jesus Christ. Google even respected this “theorem”! Unfortunately for these die hard Beatles fans the Lennon Theorem was also violated by Google in later years (Schulman (2006)).

c , however has an upper bound since we do not want $\frac{F_j}{c}$ to be below one since this would lead to a negative achievement measure. If we substitute c by the lowest fame obtained by one of the Nobel Prize winners, we obtain a lower bound of the relative achievement vis à vis the most famous economist. Lower numbers of c would lead to a negative achievement of the Nobel Prize winner with the lowest fame:

$$\frac{A_j}{A_{max}} = \frac{\ln(\frac{F_j}{F_{Min}})}{\ln(\frac{F_{max}}{F_{Min}})} \quad (4)$$

This procedure rescales the fame proxy to an relative achievement ratio that is bounded by the [0,1] interval. Bagrow et al (2004) caution that the Simkin and Roychowdhury (2011) specification is not always empirically supported. Within their very specialized field of scientists working in the field of condensed matter or statistical physics, fame seemed to be linearly related to achievement. However, they account for this finding by acknowledging that these scientists are well known within their community but do not truly reach true fame. In an extensive list of Nobel price laureates in a broad domain such as economics, however, at least some of them should be in the ‘true’ Hall of Fame.

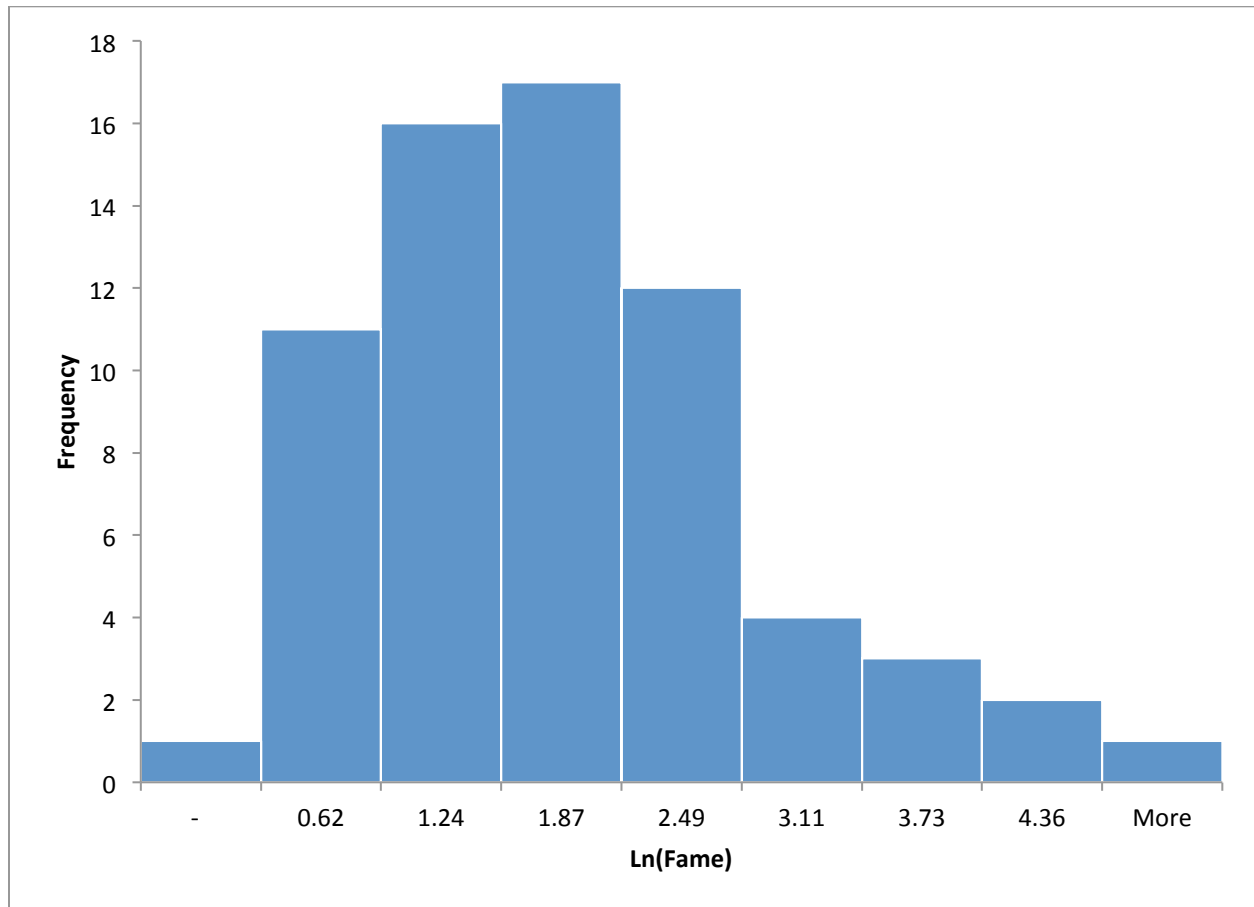
3. Data

Following Simkin and Roychowdhury (2011), we proxied fame by the number of Google hits. The number of Google hits, however, is a very noisy estimate of a person’s fame. Lawrence Klein e.g. not only is a Nobel Prize winner but – among many other Lawrence Kleins’ - there is also a Lawrence Klein that turns out to be a Cardiovascular Disease Physician in Indianapolis (Indiana). Hence, the number of Google hits may not be uniquely due to the fame of the Nobel Prize winner, but as well to the fame of namesakes. In order to avoid this noise, we always searched on “the name as displayed in Table 1” AND “Nobel Prize”. In this way the number of Google hits is severely restricted but we impose the same constraint for every candidate.

On July 25th 2011, we searched Google for the list of Nobel Prize winners economics and found the economist leading the fame-ranking to be Paul Krugman with 1.92 million Google hits i.e. F_{max} . At the bottom of the list we find Trygve Haavelmo with a merely 13 200 hits. Figure 1

shows the histogram of $\ln(F)$. We notice indeed that the number of Google hits is very skewed indicating that for some ‘unit’ of extra achievement, fame grows an increasing rate.

Figure 1: Histogram of then natural logarithm of fame



Note: The histogram depicts the frequencies of the natural logarithm of the fame of the Nobel Prize winners economics. Fame was measured on July 25th 2011 by the number of Google hits searched on “the name as displayed in Table 1” AND “Nobel Prize”. The absolute numbers can be found in Table 1.

4. Results

The results of the relative achievement ratios computed according to (4) are presented in Table 1. Without discussing each economist’s contribution, we still want to highlight the top-3. Autobiographic comments can be found on http://nobelprize.org/nobel_prizes/economics/laureates.

Table 1: Relative Achievement of Nobel Prize Laureates Economics

Name	Year	Google Hits	Relative Achievement
Paul Krugman	2008	1920000	1.00
Joseph Stiglitz	2001	1010000	0.87
Milton Friedman	1976	969000	0.86
Amartya Sen	1998	406000	0.69
John Nash	1994	329000	0.65
Peter Diamond	2010	300000	0.63
Daniel Kahneman	2002	279000	0.61
Paul Samuelson	1970	193000	0.54
James Buchanan	1986	169000	0.51
Elinor Ostrom	2009	163000	0.50
Vernon L. Smith	2002	151000	0.49
Gary Becker	1992	133000	0.46
Robert Mundell	1999	111000	0.43
Dale Mortensen	2010	109000	0.42
Herbert Simon	1978	102000	0.41
Robert Merton	1997	101000	0.41
George Akerlof	2001	99500	0.41
Robert Solow	1987	99000	0.40
James Tobin	1981	94700	0.40
Kenneth Arrow	1972	92600	0.39
Christopher Pissarides	2010	92100	0.39
Oliver Williamson	2009	90000	0.39
A. Michael Spence	2001	82800	0.37
Robert Lucas	1995	81200	0.36
Harry Markowitz	1990	79800	0.36
Myron Scholes	1997	77300	0.35
Ronald Coase	1991	70400	0.34
Edmund Phelps	2006	69200	0.33
Franco Modigliani	1985	62400	0.31
William Sharpe	1990	59900	0.30
George Stigler	1982	57100	0.29
Gunnar Myrdal	1974	56300	0.29
Thomas Schelling	2005	54400	0.28
James Heckman	2000	50000	0.27
Robert Aumann	2005	49200	0.26
Friedrich von Hayek	1974	49100	0.26

Table 1: Relative Achievement of Nobel Prize Laureates Economics (continued)

Name	Year	Google Hits	Relative Achievement
John Hicks	1972	48800	0.26
Leonid Hurwicz	2007	48500	0.26
Simon Kuznets	1971	46500	0.25
Merton Miller	1990	41400	0.23
Douglass North	1993	41200	0.23
Edward Prescott	2004	40900	0.23
Reinhard Selten	1994	40400	0.22
Robert Fogel	1993	39500	0.22
Eric Maskin	2007	36000	0.20
William Vickrey	1996	35300	0.20
Wassily Leontief	1973	34100	0.19
John Harsanyi	1994	32700	0.18
Daniel McFadden	2000	32300	0.18
Roger Myerson	2007	31000	0.17
Finn Kydland	2004	31000	0.17
Robert Engle	2003	29200	0.16
James Mirrlees	1996	29000	0.16
Maurice Allais	1988	28900	0.16
Jan Tinbergen	1969	28400	0.15
Lawrence Klein	1980	24000	0.12
Richard Stone	1984	22600	0.11
Gerard Debreu	1983	21900	0.10
Ragnar Frisch	1969	21000	0.09
James Meade	1977	20900	0.09
Leonid Kantorovich	1975	18900	0.07
Clive Granger	2003	17300	0.05
William Arthur Lewis	1079	16000	0.04
Bertil Ohlin	1977	16000	0.04
Theodore Schultz	1979	15700	0.03
Tjalling Koopmans	1975	14700	0.02
Trygve Haavelmo	1989	13200	-

Note: This table contains the names of Nobel Prize winners economics that we used to search Google (first column). The second column displays the year in which the Nobel Prize was awarded. We searched Google on June 25th 2011 using “the name as displayed in Table 1” AND “Nobel Prize” as search terms. The number of Google hits was recorded in the third column. The fourth column reports the computed relative achievement ratio

$\frac{A_j}{A_{max}} = \frac{\ln(\frac{F_j}{F_{Min}})}{\ln(\frac{F_{max}}{F_{Min}})}$. F_{Max} is 1.92 million, F_{Min} is 13 200. A_j and F_j are the achievement and the fame of the j -th economist.

We notice that Paul Krugman (Nobel Laureate in 2008) is found to be the economist achieving most. This probably for many economists is an acceptable answer. Krugman is the author or editor of approximately 20 books and 200 articles in professional journals. Being columnist for the New York Times, Krugman, is also one of the most important political columnists in the US and beyond².

Krugman almost generates double the number of Google hits in comparison to number two in the economists' hall of fame: Joseph Stiglitz. In 2001 Stiglitz obtained the Nobel Prize together with George Akerlof (number 17 on our list) and A. Michael Spence (number 23 on the achievement list). Stiglitz's career path is not confined to academia. As former senior Vice President and chief economist of the World Bank, his influence also reaches far beyond the realms of academia.

Number three on our list, Milton Friedman, had some minor public activities but his main interest remained his scientific work. His monetarist ideas nevertheless had a large impact on the economic thinking of macroeconomists and policy makers.

It goes without saying that the impact of the three top-economists in our list on both theory and practice has been large. The achievement of Stiglitz and Friedman is estimated to be at least 86 or 87 percent of Krugman's achievement. Given the fact that this reverse engineering exercise does not allow us to compute standard errors on our estimates, it is fair to say that all three would rank in the highest class of excellence. Great economists like Paul Samuelson, James Buchanan, Elinor Ostrom, Vernon L. Smith and G. Becker are assigned (at least) half of the achievements of Krugman.

In contrast to the ranking of the physicists, where –except for Nils Dalén – who had the lowest number of Google hits, the minimum achievement assigned was 15%, the lowest achievement of economists Nobel Prize winners goes down to as low as 2%. Obviously this is a lower bound on their achievement but it merely reflects a different fact. Looking at the bottom of our lists, we see

² (see http://nobelprize.org/nobel_prizes/economics/laureates/2008/krugman.html).

a lot of econometricians or quantitative economists. Gerard Debreu, Ragnar Frisch, Clive Granger, Tjalling Koopmans and ... Trygve Haavelmo. Popularity doesn't come in formulas and it reminds us to the old saying that your public of interest persons halves with every formula you use in your lecture. The economists in the top of our ranking are – in their academic work – not less quantitative or rigorous than those in the bottom but fame goes beyond pure academic success.

Trygve Haavelmo deserves some attention (and probably apologies). The Simkin and Roychowdhury (2011) methodology reduces the lower bound of his achievement to zero. Despite the discussion in physics regarding Nils Dalén's contribution, this discussion does not exist in case of Haavelmo. The Nobel Prize nomination of Nils Dalén has been questioned openly by many as not being substantive. As such assigning a zero achievement to him is not considered to be 'a big deal'. In case of Haavelmo there has been no discussion at all with respect to his contribution. Just remember that we purely rescaled his contribution to zero and that this is a lower bound.

The list does make sense whenever one does a small experiment among friends and colleagues. Just ask them whether they know Paul Krugman, Joseph Stiglitz, Milton Friedman, James Heckman, Robert Aumann, Theodore Schultz, Tjalling Koopmans and Trygve Haavelmo. Despite the pile of possible criticism to the proposed measurement approach, such a casual experiment – of which our friends and colleagues were (more or less) voluntary subjects - it turns out that some relationship between our ranking and the concept of fame cannot be denied.

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