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KOF Working Papers

How Nobel Laureates Would Perform in the Handelsblatt Ranking

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How Nobel Laureates Would Perform in the *Handelsblatt* Ranking

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Abstract

We compile a ranking of the research output of all Nobel Laureates in economics using the Handelsblatt methodology and compare the outcome to the Handelsblatt ranking of economists in the German-speaking area. Our analysis focuses on whether the overall rating scores of the Nobel Laureates are indicative of their high achievements. We discuss the role of the convexity of the employed journal weights and draw conclusions on the Handelsblatt's methodology.

Keywords: Nobel Laureates, Bibliometrics, Academic Rankings.

JEL Classification Numbers: A14, B20, I23, J24.

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Yale: We're just human beings, you know? You think you're God!
Isaac: I gotta model myself after someone.
from Woody Allen's *Manhattan*, 1979

1 Introduction

Since its first appearance in 2005, the *Handelsblatt* ranking has transformed the publication behavior of economics researchers in Germany, Austria and Switzerland (see Ursprung and Zimmer, 2007; Hofmeister and Ursprung, 2008). Given that its methodology takes into account only publications in peer-reviewed journals, in particular young scholars have almost completely abandoned contributing to books and collected volumes. This is no surprise: as predicted by Holmstrom and Milgrom (1991), if you incentivize tasks that are easy to monitor, people will put more effort into these tasks. In earlier years, German professors were notorious for writing many articles on well-known topics, most of which were published as book chapters. Some of them still do so, but to a lesser degree. However, it is still often regarded a particular characteristic of research done in the German-speaking world that it lacks originality and recycles own ideas or ideas of others.² We look at how the output measures of top researchers in the German-speaking area compare to those of the profession's top researchers - the winners of the Nobel Prize in economics. We investigate to what extent their publication behaviors are different and we describe how research dissemination has changed over time.

According to Alfred Nobel's testament, the Nobel Prizes are to be awarded to those who confer the "greatest benefit on mankind". Even though it was not included in Nobel's last will, this also applies to the 'Sveriges Riksbank Prize in Economic Sciences'. One objective of this study is to investigate the trade-off between quality and quantity of output. One should keep in mind that the achievements that led to the award can consist either in very few

² See, for instance, <http://economiclogic.blogspot.com/2011/09/bruno-frey-bubble.html>.

high-impact contributions - even a single one - or in a variety of different contributions. As an illustration, consider the following example. Think of scientists as two different kinds of sales people. Type 1 sells a small product at a high rate. Type 2 sells a big product, but does so not very often. Since publication success is always uncertain, more risk-averse people and people who are evaluated after short time spans select into type 1 and sell portfolios of smaller products. But ultimately, it is revenues or profits generated by their sales that determine the quality of the work of the two types of sales people. Revenue, obviously, not only depends on how much they sell but also on how the two products are priced relative to each other.

In bibliometric projects, the relative pricing of articles is determined by the convexity of the journal-quality weighting scheme. The scheme used by the *Handelsblatt* ignores works in collected volumes or books, but covers all *EconLit*-indexed journals as well *Nature* and *Science* and a number of statistics journals. Even top researchers might benefit from publishing a lot in low-ranked outlets on this list. As we will show, there is much heterogeneity with respect to publication patterns, both among Nobel Laureates and among German professors. But we will also demonstrate that Germans publish more in relatively low-ranked journals. Admittedly, such a comparison is somewhat unfair because Nobel Laureates have attained a status, which even the most productive German-speaking scholars will hardly ever achieve. In fact, Reinhard Selten is the only German economist who has won a Nobel Prize so far.

Previous studies on Nobel Laureates include Jones (2010) and Jones and Weinberg (2012). They find that innovations that resulted in Nobel Prizes are made increasingly later in life, a trend which can be observed across all disciplines. Weinberg and Galenson (2005) distinguish between two types of innovators and show that experimental scholars do their most important work later in life than conceptual laureates. Rablen and Oswald (2008) estimate that receiving a Nobel Prize raises life expectancy by between one and two years.

2 Changes in the dissemination of research

Until the late 1960s, the journal market was dominated by a handful of journals edited by professional societies. During the first half of the twentieth century, *Economica* and *The Economic Journal*, both edited in the UK, were among the most important journals in the profession. In current journal quality-weighting schemes, *The Review of Economic Studies* is the only European journal in the highest category. Over the 1970s, the number of outlets has increased substantially through the emergence of commercial outlets (see Bergstrom, 2001). As a result, a number of studies have employed time-varying weighting schemes (see e.g. Kalaitzidakis, Mamuneas, and Stengos, 2011).

Conley, Crucini, Driskill, and Onder (2012) document that more recent cohorts of academic economists publish significantly fewer research papers than earlier cohorts. Increased editorial delays in combination with lower acceptance rates have made it much harder for young scholars to get their work published. Based on an observation made by Ellison that publication lags in economics have become substantially longer over time (see Ellison, 2002), they refer to this as the “Ellison effect”. Ellison argues that the most important reason for widening publication lags has been a shift in the focus of the editorial and review process from the pure idea towards robustness checks and other minor improvements that are made in additional rounds of revisions. This focus has led to increased article length and longer articles take more time to referee (see Hamermesh, 1994). In line with this hypothesis, Conley, Crucini, Driskill, and Onder (2012) find that economists are still equally productive if article length in pages is accounted for. In a related paper, Ellison (2011) confirms that the productivity of all cohorts of economists at Harvard University’s economics department has remained high. But he also observes that these top economists have become less likely to publish in refereed journals. This tendency suggests that peer reviewed journals are losing importance relative to e.g. working papers as means of dissemination of research results for

economists affiliated with top institutions.

3 The *Handelsblatt* ranking of economists

Since 2005, the German business newspaper *Handelsblatt* has been publishing a ranking of academic economists in Germany, Austria and Switzerland on an almost yearly basis. The *Handelsblatt* ranks individual researchers' output over the last five years and over their entire careers. It features an additional ranking of researchers under the age of 40 years. The *Handelsblatt* then aggregates the individual counts at the department level to rank universities. The ranking makes use of publication data retrieved from *EconLit*. The data is then uploaded to the *Portal Forschungsmonitoring* (www.forschungsmonitoring.org), which researchers can login to in order to validate and complete their entries.

The *Handelsblatt*'s journal quality weighting scheme is an ordinal transformation of the scheme developed by Combes and Linnemer (2010), which covers all journals indexed by *EconLit*. Additionally, it includes a number of statistics journals, as well as *Nature* and *Science*. The top ten journals receive the weight 1, followed by 26 journals with a weight of 0.6 points, 46 journals with weight 0.3, 75 journals with weight 0.2, 112 journals with weight 0.15 and 166 journals with weight 0.1. The remaining 856 journals are each worth 0.05 points. To avoid co-author courtesies, the *Handelsblatt* accounts for co-authorship by attributing a weight of $1/n$ to articles written by n authors. Thus, one point in the *Handelsblatt* ranking can be thought of as equivalent to one single-authored publication in the *American Economic Review* (*AER*). The output measure used by the *Handelsblatt* is then the sum of the scores of an individual researcher's articles over a specific time span.

Table 1 shows the outcome of the *Handelsblatt* lifetime achievement ranking in 2011. The most productive economist in the German speaking area, political economist Bruno S. Frey, has earned a *Handelsblatt* count of 28.41. Martin Hellwig - a theoretical microeconomist - is second with a count of 22.92, followed by a group consisting of behavioral economist Ernst Fehr, industrial

economist Roman Inderst and labor economist Oded Stark.

A comparison of *Handelsblatt* rankings for different years shows that the scores required to obtain high ranks have increased over time.³ This German upward trend stands in contrast to the international stagnation described above and indicates that the *Handelsblatt* ranking has indeed changed the publication behavior of German economists.

Journal quality-based rankings like the one presented in this paper neglect within journal heterogeneity of articles. Among others Oswald (2007) finds that articles in a given journal vary substantially with respect to citations received. It is, usually, hard to predict the impact an article will have right after its submission. Editors and referees have been shown to reject papers that should have been published and to accept papers that they should have rejected (see e.g. Hofmeister and Krapf, 2011). Other studies show a moderate correlation between the *Handelsblatt* ranking and other rankings. The Spearman coefficient of rank correlation is between 0.31 for Austria and 0.75 for Switzerland with the *RePEc* ranking (Wohlrabe, 2011). Citations explain 29% of the variation in the *Handelsblatt* counts according to Schläpfer and Schneider (2010).

The within journal heterogeneity could be accounted for by incorporating citations into the *Handelsblatt* rankings. But citations have drawbacks of their own, including self-citations, negative citations and citation cartels. According to the so-called ‘Matthew’ effect many articles get cited only because they have been cited before. Moreover, citation intensity varies heavily across fields, more weight is given to research that serves as an input relative to final results, and the time lag between the research process and the citation counts often is even longer than the publication lag (Ursprung and Zimmer, 2007).

4 The ranking of Nobel Laureates

³ E.g. the minimum count for being listed among the top 100 researchers younger than 40 years old has increased from 1.11 in 2010 to 1.34 in 2011.

For our ranking of Nobel Laureates, we can, unfortunately, not guarantee a data accuracy as high as for researchers from the German-speaking area. This has two reasons. First, *EconLit*, which we again used as our primary source of data, provides a comprehensive coverage of publication data only from 1969 onwards. Second, in contrast to *Forschungsmonitoring*, we did not make the data of the Nobel Laureates available for personal validation. We tried to make up for potential shortcomings by using three additional sources of data: the researchers' CVs, their *RePEc* profiles and bibliographies of Nobel Laureates' publications that appeared in the *Scandinavian Journal of Economics*.

The results can be found in Tables 2 to 5. The distribution of scientific contributions across Nobel Laureates is highly convex and skewed to the right. That Paul Samuelson was the most productive among the Nobel Prize winners is hardly surprising. Yet, the wide margin of his lead is impressive. Our results show that publication intensity varies across fields. Samuelson contributed to virtually all fields of economics. Samuelson is considered one of the fathers of modern financial economics. Pure financial economists, however, are not among the most highly ranked Nobel Laureates. Critics might argue that this is due to the employed journal quality-weighting scheme, although the *Journal of Finance* and the *Journal of Financial Economics* are both included in the *Handelsblatt's* top category.

To win a Nobel Prize, you not only need to have new ideas, you also have to make them get heard of. James M. Buchanan was convinced that "[i]t is only by varied repetition that new ideas can be impressed upon reluctant minds."⁴ Andrew Gelman refers to this method as the strong form of 'Arrow's other theorem', according to which "every result will be published five times".⁵ The numbers from the *Handelsblatt* ranking are not informative regarding the

⁴ See <http://economicsintelligence.com/2011/10/27/on-the-merits-of-repeatingoneself-a-conference-in-defense-of-bruno-frey/>.

⁵ See http://themonkeycage.org/blog/2011/04/22/arrows_other_theorem/.

diversity of an author's portfolio. In particular Arrow has contributed numerous ideas to various sub-fields of economics. Our numbers provide no indication that Arrow was excessively repetitive, his high average score per article speaks against that.

George J. Stigler was well aware of the trade-off between quality and quantity in research, which is reflected by his high number of points per publication. When asked if it bothered him that he had 'only' 100 publications compared to Harry G. Johnson's 500 published papers, he is said to have replied "ah, but mine are all different." Johnson was certainly one of the most productive economists ever. However, he did not receive a Nobel Prize - maybe because he died too early - and was, therefore, not included in our analysis.

Only 15 of the 69 Nobel Laureates earned lower *Handelsblatt* counts than the top 20 researchers in the German speaking area. Achieving high scores in a *Handelsblatt*-type ranking is not a necessary condition for winning the Nobel Prize, though. No number of publications in the *AER* adds up to one Nobel Prize. Among the Nobel Prize winners with low *Handelsblatt* scores, Allais did not speak English, which made it hard for him to get his works published in international journals. Similarly, many of Selten's early works were written in German - being of Jewish origin he was not allowed to attend high school and learn foreign languages in Nazi Germany. Part of the research of Robert Fogel and Daniel Kahneman follows the publication patterns of history and psychology, respectively.

Many publications of other low-ranked Nobel Laureates, however, are single-authored and appeared in top journals. Consider Michael Spence who earned only 8.63 points in the *Handelsblatt* ranking but who achieves a high average score of 0.60 points per publication. John Nash has written a very limited number of publications during the short period, in which he was active as an economist, too. The few works Nash has contributed, however, are among the most highly influential in economics ever.

Thus, Nash illustrates that one single paper alone adds little

to an author's score in the *Handelsblatt* ranking. But very few - or even a single paper alone - can make the difference when it comes to the decision if someone is awarded the Nobel Prize. Akerlof's 'Market for Lemons' and the 'Black-Scholes' option pricing model are two famous examples of articles, which earned their authors Nobel prizes, but which have initially had a very hard time getting published at all (cf. Gans and Shepherd, 1994). Eventually, both articles ended up in top general interest journals.

In Gans and Shepherd (1994), Robert Solow justifies the fact that he never had a paper rejected by saying: "I hate writing articles." Our numbers, however, show that to conclude that he had written only relatively few articles would be highly misleading. Ronald Coase's output is regularly underestimated, too. He is famous in particular for two articles; the remainder of his bibliography is not mentioned very often. But consider only the year 1937 - Coase was 26 years old - in which the first of these two articles, "The Nature of the Firm" was published in *Economica*: in that year, Coase had another (co-authored) article in *Economica* and one in *The Review of Economic Studies*.

The *Handelsblatt*'s tables also provide outcomes based on two very convex schemes, one which only counts publications in the highest category (A+) and one which counts all publications in categories A+ and A. Among the Nobel Laureates, the correlation between counts from A+ and A journals and total counts is almost perfect with a Spearman coefficient of rank correlation of 0.98. The ordering of the top German economists is much more sensitive to the convexity of the underlying weighting scheme (Spearman coefficient = 0.63) because the fraction of articles of German economists that appear in top journals is much smaller.

5 Conclusion

Using Nobel Laureates as a benchmark is of interest because, as Hirsch (2005) notes, "[f]or the few scientists who earn a Nobel prize, the impact and relevance of their research is unquestionable." However, any such comparison necessarily

involves comparing apples and oranges. Most German economics professors are more focused on publishing in low-ranked journals. The *Handelsblatt* could encourage them to shift their focus towards fewer publications that may appear in higher-ranked journals by adopting a more convex journal quality-weighting scheme. It is not entirely clear that it should do so. On the one hand, such a shift would reduce the incentive to reproduce existing work in low-ranked journals. Top institutions in the United States only take publications in 'top 5', top field and a small number of other journals into account for tenure decisions. But if the *Handelsblatt* were to follow this approach, it would expose aspiring scholars in the German-speaking area to a lot of further uncertainty. And one might as well argue that the economics profession is already too focused on a very small set of journals, anyway.

A further insight offered by our analysis is that performance in the *Handelsblatt* ranking is an imperfect indicator for great scientific achievements that lead to winning a Nobel Prize. On the one hand Paul Samuelson, an economist with a superior reputation leads the table. On the other hand, only 27 Nobel Laureates have earned higher *Handelsblatt* counts than the top researcher in the German-speaking area, who has not (yet) won a Nobel Prize. This confirms the finding by Hamermesh and Pfann (2012) that, conditional on its impact, the quantity of output has no or even a negative effect on being awarded honors and prizes in economics. Our 'ranking' of Nobel Laureates must, therefore, not be understood as a ranking of Nobel Prize winners' scientific quality. Rather, our goal was to provide examples of different kinds of publication behaviors.

Many initiatives were enacted in various countries in recent years to encourage publications in scientific journals. Prominent examples are the *Research Assessment Exercise (REA)* in the United Kingdom and the *National Research Assessment (NRA)* in Australia. Many of these initiatives directly linked funding to research output measured by publications. The aim was to catch up with the world's top departments, which have always been more successful at getting

their works published in academic journals. At the same time, Ellison (2011) suggests that refereed journals are losing their importance as a means of dissemination of scientific output for people in these highly ranked institutions.

The *Handelsblatt* ranking may not be a perfect measure of past research output. Still, we believe that it sets appropriate incentives for future research. Transforming research output into comparable metrics increases transparency and offers valuable guidance. When people start academic careers, it is usually hard to tell how far they can get. Standard research ratings that give sufficient weight to quantity are a major source of motivation for aspiring researchers. And it is the level of activity of all economists, which determines how far those can reach who are at the top of the pyramid of the economics community.

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TABLE 1: THE 2011 *HANDELSBLATT* RANKING OF ECONOMISTS.

Rank	Name	Year of birth	<i>Handelsblatt</i> counts				
			Lifetime	A+	A+ & A	per year	per article
1	Bruno S. Frey	1941	28.41	4.08	10.40	0.62	0.10
2	Martin Hellwig	1949	22.92	7.00	19.15	0.60	0.33
3	Ernst Fehr	1956	20.07	11.65	17.15	0.80	0.21
4	Roman Inderst	1970	19.18	5.50	15.20	1.74	0.34
5	Oded Stark	n.a.	18.85	1.75	6.15	0.61	0.18
6	Dennis C. Mueller	1940	18.79	4.83	8.33	0.42	0.15
7	Kai A. Konrad	1961	17.11	0.75	8.60	0.81	0.18
8	Helmut Lütkepohl	1951	17.00	0.33	9.93	0.57	0.20
9	Hans-Werner Sinn	1948	15.64	2.00	7.70	0.47	0.16
10	Gerard van den Berg	1962	14.96	2.67	12.22	0.71	0.23
11	Enno Mammen	1955	14.81	1.00	11.05	0.53	0.20
12	Wolfgang K. Härdle	1953	14.51	0.33	10.18	0.50	0.14
13	Harald Uhlig	1953	13.99	7.50	11.40	0.67	0.35
14	Werner Hildenbrand	1936	13.85	8.17	12.67	0.32	0.45
15	Henning Bohn	1960	13.57	8.50	10.50	0.57	0.45
16	Hans Gersbach	1959	13.37	1.00	5.70	0.64	0.16
17	Ulrich Kohli	1948	13.13	2.50	7.00	0.41	0.17
18	Harris Dellas	1958	13.06	3.83	8.43	0.50	0.24
19	Walter Krämer	1948	12.97	1.58	5.53	0.41	0.14
20	Lutz Kilian	1963	12.88	2.5	9.00	0.8	0.26

TABLE 2: A *HANDELSBLATT* RANKING OF NOBEL LAUREATES.

Rank	Name	Award	Life	<i>Handelsblatt</i> counts						
				Lifetime	after Award	before Award	A+	A+ & A	per year	per article
1	Paul A. Samuelson	1970	1915-2009	106.04	40.04	66.00	46.00	61.60	2.00	0.66
2	Joseph E. Stiglitz	2001	1943-	67.96	0.00	67.96	48.83	64.53	2.06	0.49
3	Vernon Smith	2002	1927-	48.13	3.99	44.14	34.33	39.73	1.00	0.42
4	George J. Stigler	1982	1911-1991	47.30	2.70	44.60	35.00	39.20	0.99	0.62
5	Thomas J. Sargent	2011	1943-	46.36	0.00	46.36	33.42	40.09	1.08	0.37
6	Kenneth J. Arrow	1972	1921-	45.61	20.01	25.60	22.00	24.85	1.16	0.58
7	Amartya Sen	1998	1933-	44.35	4.63	39.73	23.50	32.10	0.97	0.42
8	James Tobin	1981	1918-2002	43.62	9.54	34.08	24.75	30.75	0.85	0.54
9	Robert M. Solow	1987	1924-	42.06	9.58	32.48	24.08	29.33	0.90	0.50
10	James J. Heckman	2000	1944-	41.61	14.28	27.33	16.50	22.10	1.05	0.35
11	Lawrence Klein	1980	1920-	40.63	8.93	31.70	24.33	28.83	0.86	0.45
12	Peter Diamond	2010	1940-	38.19	1.35	36.84	22.67	33.97	0.80	0.43
13	Milton Friedman	1976	1912-2006	36.21	9.48	26.73	21.50	23.60	0.65	0.59
14	Clive W. J. Granger	2003	1934-2009	32.31	5.49	26.83	6.33	20.23	0.67	0.24
15	Edmund Phelps	2006	1933-	32.28	2.18	30.10	22.00	25.00	0.67	0.37
16	James M. Buchanan	1986	1919-	32.23	6.38	25.85	13.00	14.80	0.70	0.26
17	John Hicks	1972	1904-1989	32.20	6.00	26.20	14.50	21.10	0.60	0.43

A *HANDELSBLATT* RANKING OF NOBEL LAUREATES CONTINUED.

Rank	Name	Award	Life	<i>Handelsblatt</i> counts						
				Lifetime	after Award	before Award	A+	A+ & A	per year	per article
18	George Akerlof	2001	1940-	31.43	3.50	27.93	23.83	26.83	0.87	0.55
19	Wassily Leontief	1973	1906-1999	31.36	2.76	28.60	22.50	27.90	0.60	0.72
20	Eric Maskin	2007	1950-	30.38	2.40	27.98	18.83	26.63	1.00	0.41
21	Paul Krugman	2008	1953-	30.24	1.55	28.69	13.67	19.57	0.96	0.27
22	Franco Modigliani	1985	1918-2003	29.36	3.70	25.67	20.75	23.75	0.63	0.35
23	Robert E. Lucas	1995	1937-	29.30	7.10	22.20	13.75	19.15	0.67	0.48
24	Christopher Pissarides	2010	1948	29.25	1.10	28.15	15.00	24.90	0.78	0.43
25	Robert Engle	2003	1942	29.14	5.05	24.09	10.50	20.90	0.83	0.34
26	Ragnar Frisch	1969	1895-1973	28.78	0.10	28.68	24.00	26.70	0.65	0.50
27	Jan Tinbergen	1969	1903-1994	28.73	6.05	22.68	13.25	20.23	0.65	0.39
28	Gary S. Becker	1992	1930-	27.99	6.08	21.92	17.17	19.57	0.55	0.49
29	Christopher A. Sims	2011	1942-	26.50	0.00	26.50	13.33	21.63	0.66	0.35
30	Edward C. Prescott	2004	1940-	24.49	4.18	20.32	12.25	17.40	0.60	0.29
31	Herbert Simon	1978	1916-2001	24.06	6.20	17.86	15.75	17.15	0.45	0.58
32	James E. Meade	1977	1907-1995	23.97	4.68	19.29	8.67	16.77	0.45	0.45
33	Oliver Williamson	2009	1932-	23.125	1.05	22.075	12	13.7	0.55	0.32
34	Theodore Schultz	1979	1902-1998	21.10	2.65	18.45	14.50	16.00	0.40	0.62

A *HANDELSBLATT* RANKING OF NOBEL LAUREATES CONTINUED.

Rank	Name	Award	Life	<i>Handelsblatt</i> counts						
				Lifetime	after Award	before Award	A+	A+ & A	per year	per article
35	Roger Myerson	2007	1951-	20.91	2.05	18.86	7.83	16.73	0.65	0.45
36	William Vickrey	1996	1914-1996	19.60	0.50	19.10	15.50	17.00	0.35	0.48
37	Tjalling Koopmans	1975	1910-1985	19.44	3.20	16.24	13.17	16.24	0.46	0.74
38	Richard Stone	1984	1913-1991	18.94	2.38	16.57	7.67	14.27	0.35	0.40
39	Simon Kuznets	1971	1901-1985	18.45	3.05	15.40	9.00	11.10	0.38	0.43
40	Robert Mundell	1999	1932	17.98	3.58	14.40	11.00	12.20	0.34	0.44
41	William Sharpe	1990	1934-	17.93	1.55	16.38	11.50	13.90	0.61	0.51
42	Robert Aumann	2005	1930-	17.86	2.10	15.76	8.83	15.03	0.38	0.49
43	Robert C. Merton	1997	1944-	17.71	1.61	16.10	10.00	13.70	0.58	0.46
44	Daniel McFadden	2000	1937-	17.18	3.26	13.92	5.50	12.30	0.42	0.36
45	John C. Harsanyi	1994	1920-2000	16.45	2.75	13.70	5.50	10.60	0.33	0.38
46	Gerard Debreu	1983	1921-2004	16.30	1.05	15.25	12.50	14.60	0.48	0.69
47	Merton Miller	1990	1923-2000	15.77	2.87	12.90	10.00	11.60	0.31	0.38
48	James Mirrlees	1996	1936-	15.43	1.90	13.53	7.33	12.03	0.40	0.39
49	Dale Mortensen	2010	1939	15.00	1.00	14.00	6.50	12.22	0.38	0.40
50	Thomas Schelling	2005	1921-	14.68	1.15	13.53	10.00	12.10	0.23	0.56
51	Ronald H. Coase	1991	1910-	14.68	2.75	11.93	2.00	3.50	0.21	0.25
52	Myron Scholes	1997	1941-	14.24	3.16	11.08	9.00	10.50	0.41	0.46

A *HANDELSBLATT* RANKING OF NOBEL LAUREATES CONTINUED.

Rank	Name	Award	Life	<i>Handelsblatt</i> counts						
				Lifetime	after Award	before Award	A+	A+ & A	per year	per article
53	Trygve Haavelmo	1989	1911-1999	14.18	1.15	13.03	10.50	12.30	0.26	0.65
54	Friedrich Hayek	1974	1899-1992	13.75	1.45	12.30	6.00	8.40	0.26	0.38
55	Douglass C. North	1993	1920-	11.16	1.65	9.51	3.50	4.10	0.22	0.21
56	Reinhard Selten	1994	1930-	10.53	6.33	4.20	0.50	2.20	0.12	0.16
57	Daniel Kahneman	2002	1934-	10.09	3.94	6.15	4.67	5.17	0.17	0.26
58	Harry Markowitz	1990	1927-	9.75	2.35	7.40	5.83	7.15	0.19	0.53
59	Leonid Hurwicz	2007	1917-2008	9.69	1.00	8.69	4.50	6.90	0.18	0.27
60	Bertil Ohlin	1977	1899-1979	9.25	1.90	7.35	3.00	6.20	0.14	0.35
61	Maurice Allais	1988	1911-2010	8.95	1.75	7.20	4.50	5.10	0.17	0.27
62	Finn Kydland	2004	1943-	8.93	1.70	7.23	3.33	4.53	0.26	0.20
63	Michael Spence	2001	1943-	8.63	1.43	7.20	5.50	6.60	0.25	0.60
64	Robert W. Fogel	1993	1926-	7.53	2.90	4.63	2.00	2.60	0.15	0.29
65	Elinor Ostrom	2009	1933-	6.27	2.86	3.41	0.00	0.20	0.09	0.12
66	Gunnar Myrdal	1974	1898-1987	5.25	2.05	3.20	1.00	1.00	0.08	0.21
67	Arthur Lewis	1979	1915-1991	4.60	0.00	4.60	2.50	2.50	0.12	0.20
68	Leonid V. Kantorovich	1975	1912-1986	3.43	1.96	1.48	0.00	1.20	0.09	0.18
69	John F. Nash Jr.	1994	1928-	3.06	0.23	2.83	2.33	2.33	0.06	0.47

TABLE 3: DESCRIPTIVE STATISTICS FOR THE DATA OF NOBEL PRIZE WINNERS (N=69).

Variable		Mean	Std. dev.	Min	Max
	year Nobel Prize awarded	1991.88	12.89	1969	2011
	year of birth	1925	15.01	1895	1953
	age at which Nobel Prize received	66.88	8.03	51	90
	year of first publication	1953.39	15.72	1925	1979
	# of academic years before Award	38.49	7.97	17	58
	# of articles before Award	49.81	29.43	6	139
counts	before award	20.62	13.36	1.48	67.96
	after award	4.02	5.54	0.00	40.04
	total	24.64	16.53	3.06	106.04
	from A+	13.41	10.28	0.00	48.83
	from A+ & A	17.66	12.61	0.20	64.53
	per year	0.56	0.39	0.06	2.06
	per article	0.42	0.14	0.12	0.74