



Nobel Prizes

The Changing Pattern of Awards

September 2003

Analysis of Nobel Prizes

by The Sutton Trust

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Each year, prizes are awarded to those judged to have made the best contributions in physics, chemistry, physiology or medicine, economics, peace and literature. In his will, Alfred Nobel wrote, "It is my express wish that in awarding the prizes no consideration whatever shall be given to the nationality of the candidates, but that the most worthy shall receive the prize, whether he be a Scandinavian or not."

This research is based on the official Nobel e-Museum's lists of Laureates (<http://www.nobel.se>). It concentrates on prizes in chemistry, economics, physiology or medicine, and physics.

The e-Museum gives details of Laureates' nationalities and affiliations to universities. According to the website, no literature Laureates and only one peace Laureate have been affiliated with a university when they won their prize. All our statistics concern only those science and economics Laureates who are listed as being affiliated with a university at the time their prize was awarded, which account for 532 out of 559 recipients (95%).

For a prize in a given year, there are very often multiple winners who share the prize (currently about £770,000). Since 1900, there have been 317 prizes awarded to 559 recipients, an average of just over 1.75 per prize.

Some Laureates were associated with more than one university when they won their prize. Where the universities are in different countries, we have judged which was their primary university (e.g. some Laureates did their research at one institution, and held a Visiting Professorship at another).

Table 1 shows the nationality of Nobel Laureates. US citizens dominate the list: since 1970, over half of Nobel Prizes have been won by Americans, and recently the figure has been closer to two-thirds. The number of British citizens, although still second, has fallen in the past twenty five years. Germans won 30% of the Prizes pre-World War Two, but have won less than 10% of prizes since 1940. Only 22 out of 533 prizes have been won by people from outside Europe and North America, and only two have been won by Africans. Table 2 gives a detailed breakdown of this information.

Table 3 shows the winning Laureates by the nationality of their major institution, clearly indicating the growing dominance of America. Hardly any universities outside North America and Europe have won Nobel Prizes. US universities have won about half the Nobel Prizes overall, but now win over 70%. Britain's share of winners – consistently about 20% until the 1970s – has now fallen to under 10%, a distant second to the United States, whilst Germany (which won 30% of the prizes in the early part of last century) is yet to win a single prize this decade.

Table 5 gives details of all the occasions when a Laureate has won a Nobel Prize at an institution outside his/her home country. For example, in 1912, a Frenchman won the Nobel Prize for Medicine, whilst working at an American university. As the table makes clear, there has been a trend of 'brain gain' by American universities. In the first half of the twentieth century, just three Nobel Prizes were won in American universities by non-Americans, the same number as have been awarded in the first 3 years of the 21st century. Since 1990, British citizens have won ten Nobel Prizes for their work in universities, but four of these have been won for work in American universities.

Clearly Nobel Prizes do not give us the whole picture. Although they are the best known, most prestigious and richest prizes, they do not cover Maths or other sciences such as Ecology, Evolution and Space Science. Including all major prizes in the analysis does not, however, alter the conclusion; the United States' share is over half, and the UK comes in second at around 10%. Another measure of a country's contribution to Science is its share of citations in scientific papers and here again the United States accounts for half of the world's citations and the United Kingdom is second with 9%.

It is clear from all these indicators that the United States holds an increasingly dominant position in scientific research while other major countries' relative positions, including Britain's, have declined.

The reason for America's dominance and Britain's relative decline are not hard to find. The US spends 2.7% of its GDP on higher education compared with an OECD average of 1.3%, and a UK spend of just 1%. 20 years ago the UK spent £10,000 per student on university tuition at today's prices; now it spends only £5,100. The reverse is true in America where for private universities average funding per student has grown from £6,000 to over £11,000 over the past two decades, top private universities charge £16,000 per student while even state universities are funded at over £7,000 per student.

That money matters is demonstrated by the research The Sutton Trust published on endowments earlier this year. It showed that the top 5 ranking of universities in terms of endowment per student - Princeton, Yale, Harvard, Stanford and MIT– mirrors exactly the university ranking as determined by *US News and World Report*. While the causal nature of the relationship between finance and quality is of course complex, the closeness of the fit between the two is striking. The report also shows that Oxford and Cambridge are the only British universities with significant endowments at about £2 billion each. All other British universities combined only have an endowment of approximately £2 billion. Even Oxford and Cambridge's endowment is dwarfed by top American universities and they would rank only fifteenth on the US university list while no other UK university would come in the top 150.

Nobel Prizes give a time-delayed measure of performance and given the rapid deterioration of funding at British universities over the last 20 years it is likely that Britain's current position vis a vis the US is worse than that suggested by this analysis of Nobel Prizes. However, there is some consolation in that Britain, although still a distant second to the United States is ahead of more populous countries such as Germany and Japan.

	US	UK	Ger	REur	Jap	RoW	No. of prizes
1900-09	3	15	30	52	0	0	33
1910-19	4	13	33	50	0	0	24
1920-29	6	22	25	41	0	6	32
1930-39	24	18	24	32	0	3	38
1940-49	43	17	3	30	3	3	30
1950-59	46	17	13	19	0	6	54
1960-69	48	18	8	20	2	3	60
1970-79	56	18	4	17	1	4	77
1980-89	57	8	12	19	3	1	76
1990-99	65	8	7	12	0	8	75
2000-02	61	12	6	9	12	0	33
NUMBER OF PRIZES	235	77	67	125	9	19	532
	44%	14%	13%	23%	2%	4%	

	US	UK	Ger	Fra	Swi	Swe	Rus	Neth	Den	Jap	Italy	Aus	Can	Bel	Nor	Arg	Oth	
1900-09	1	5	10	6	1	1	2	3	1		2						1	33
1910-19	1	3	8	5	1	2		2				1		1				24
1920-29	2	7	8	2	1	3		2	3			2	2					32
1930-39	9	7	9	2	2			1			1	4		1			2	38
1940-49	13	5	1		2	1			1	1		1				1	4	30
1950-59	25	9	7		1	1	4	1			1						5	54
1960-69	29	11	5	4		1	3	1		1	1				2		2	60
1970-79	43	14	3	1	2	3	2		2	1		1	1	2		1	1	77
1980-89	44	6	9	3	2	4		1	1	2	2		1		1			76
1990-99	48	6	5	3	2			2	1				4	1			3	75
2000-02	20	4	2		1	1	1			4								33
TOTAL	235	77	67	26	15	17	12	13	9	9	7	9	8	5	3	2	18	532

	US	UK	Ger	REur	Jap	RoW	No. of prizes
1900-09	3	18	33	45	0	0	33
1910-19	8	13	33	46	0	0	24
1920-29	6	22	25	41	0	6	32
1930-39	26	18	29	24	0	3	38
1940-49	47	20	3	23	3	3	30
1950-59	52	17	13	19	0	0	54
1960-69	48	18	8	20	2	3	60
1970-79	56	19	4	18	0	3	77
1980-89	60	8	6	23	1	1	76
1990-99	77	5	7	8	0	3	75
2000-02	70	9	0	9	12	0	33
NUMBER OF PRIZES	255	77	64	118	7	11	532
	48%	14%	12%	22%	1%	2%	

	US	UK	Ger	Fra	Swi	Swe	Rus	Neth	Den	Jap	Italy	Aus	Can	Bel	Nor	Arg	Oth	
1900-09	1	6	11	7	1	1	1	2	1		1						1	33
1910-19	2	3	8	4	1	2		2				1		1				24
1920-29	2	7	8	3		3		2	3			2	2					32
1930-39	10	7	11	2	2						1	2		1			2	38
1940-49	14	6	1		2	2			1	1						1	2	30
1950-59	28	9	7		1	1	4	1			1						2	54
1960-69	29	11	5	4		1	3	1		1	1				2		2	60
1970-79	43	15	3	1	2	3	2		2			1	1	3		1		77
1980-89	46	6	5	3	9	3				1	1		1		1			76
1990-99	57	4	5	2	3			1	1				2					75
2000-02	23	3			1	1	1			4								33
TOTAL	255	77	64	26	22	17	11	9	8	7	5	6	6	5	3	2	9	532

Table 5: Nobel Prizes won by persons outside their country of nationality

Brain gain - nationality of the institution where prize was won

Year	Nationality of recipient	Year	Nationality of recipient
US		Switzerland	
1912	France	1984	Germany
1930	Austria	1984	Denmark
1945	Austria	1984	Italy
1951	South Africa	1984	Netherlands
1957	China	1986	Germany
1957	China	1987	Germany
1973	Japan	1988	US
1974	Belgium	1992	France
1979	UK		
1981	Sweden	UK	
1987	Japan	1909	Italy
1988	Germany	1945	Australia
1990	Canada	1975	US
1991	UK	1979	Pakistan
1993	UK	1998	India
1996	Australia	Germany	
1998	Germany	1901	Netherlands
1998	UK	1933	Austria
1999	Canada	1936	Netherlands
2000	Germany	1995	Netherlands
2001	Germany	France	
2002	UK	1908	Russia
		1920	Switzerland
		Sweden	
		1943	Hungary

