

The Nobel Memorial Prize in Economics: A Biographical Overview

Historical Background

Alfred Nobel (1833–96) was a Swedish inventor and industrialist who made a fortune largely from the manufacture of dynamite and other explosives. He left most of his money in trust and, according to the terms of his will,

the capital, invested in safe securities by my executors, shall constitute a fund, the interest on which shall be annually distributed in the form of prizes to those who ... shall have conferred *the greatest benefit on mankind*. (emphasis added)

More specifically, Nobel's will states that five prizes should be awarded to the persons who have:

- 'made the most important discovery or invention' in Physics;
- 'made the most important discovery or improvement' in Chemistry;
- 'made the most important discovery' in Physiology or Medicine;
- 'produced the most outstanding work in an ideal direction' in Literature;
- 'done the most or the best work for fraternity between nations, for the abolition or reduction of standing armies and for the holding and promotion of peace congresses' (Nobel Foundation, 2004).

In 1900 the executors of Nobel's will established a private institution, the Nobel Foundation, to manage his bequest and to coordinate the work of the various prize-awarding institutions. The five original Nobel Prizes in Physics, Chemistry, Physiology or Medicine, Literature and Peace have been awarded annually since 1901.

It was not until 1968 that the Sveriges Riksbank (Bank of Sweden), as part of its tercentenary celebrations, instituted a sixth award: 'the Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel'. The Economics Prize is then technically not a Nobel

Prize, as it was not part of the terms of Nobel's will, rather it is a Nobel Memorial Prize funded by the Bank of Sweden on the basis of a perpetual annuity. However, the Prize is popularly known as the Nobel Prize in Economics. The Prize is awarded annually by the Royal Swedish Academy of Sciences (which also awards the Prizes in Physics and Chemistry) in accordance with the same basic principles and rules as the original five Nobel Prizes. According to the statutes, 'the Prize shall be awarded annually to the person who has carried out a work in economic science of the eminent significance expressed in the Will of Alfred Nobel drawn up on November 27, 1895'. This means that it rewards specific discoveries, achievements or breakthroughs in economic science, rather than outstanding economists. First awarded in 1969, the Prize consists of a gold medal, a diploma bearing a citation and a sum of money (in recent years approximately \$1 million).

Nomination and Selection Process

The work in handling nominations and the selection of the Nobel Memorial Laureates in Economics is largely undertaken by the Economics Prize Committee of the Royal Swedish Academy of Sciences. Each year invitations to nominate candidates for the Prize in Economic Sciences are sent to:

1. Swedish and foreign members of the Academy;
2. members of the Economics Prize Committee;
3. recipients of the Prize in Economic Sciences;
4. permanent professors in relevant subjects at universities and colleges in Sweden, Denmark, Finland, Iceland and Norway;
5. holders of corresponding chairs in at least six universities or colleges, selected for the relevant year by the Academy to ensure the appropriate distribution between different countries and their seats of learning; and
6. other scientists from whom the Academy may see fit to invite proposals.

Source: Nobel Foundation (2004).

The Prize Committee investigates the nominations it receives (1 February being the latest date of receipt) and commissions studies by specially appointed experts of the most prominent nominated candidates. It then submits its recommendations in the form of a

report (including the expert studies) to the Social Science Class of the Academy. In keeping with the statutes of the Nobel Foundation, information about the nominations is confidential and cannot be disclosed for a period of 50 years. The full Academy meets in mid-October to decide the final choice of Laureates (a maximum of three economists can be awarded the Prize in any one year) by a secret ballot. The Academy's final award decision, which must be made not later than 15 November, is usually reached after it has met in mid-October. The deliberations and votes of the Academy are kept secret. The annual presentation of the award – along with the Prizes for Physics, Chemistry, Physiology or Medicine, and Literature – is made in a formal ceremony, presided over by the Swedish Royal Family, at the Stockholm Concert Hall on 10 December, the anniversary of Alfred Nobel's death.

The Nobel Memorial Laureates in Economics

Over the 1969–2004 period, 55 economists have been awarded the Prize. Single awards have been made on 20 occasions and joint awards on 16 occasions. In the case of joint awards, the Prize has been shared between two economists on 13 occasions and between three economists on three occasions. Table 1 provides summary information on the 55 Nobel Memorial Laureates in Economics including:

- their year and country of birth; and citizenship if different from country of birth (column 3);
- the university where they received their first degree and the year of its award (column 4);
- the university where they received their higher degree and the year of its award (column 5);
- their university/institutional affiliation at the time of the award of the Prize (column 6);
- their broad field of study (column 7); and
- the citation for which they received the Prize (column 8).

In what follows we use the summary information contained in Table 1 to comment on a number of characteristics of the awards.

Economics Prize Awards by Classification

It is possible to categorise the awards in a number of ways. For example, Lindbeck (1985) adopts a classification involving:

1. general 'basic' economic theory (e.g., Samuelson: 1970);
2. theoretical contributions concerning specific aspects or sectors of the economy (e.g., Friedman: 1976);
3. powerful new methods of economic analysis: their development and application (e.g., Leontief: 1973);
4. more nearly 'pure' empirical research (e.g., Kuznets: 1971); and
5. non-formalised innovative thinking (e.g., Myrdal and Hayek: 1974).

More recently Lindbeck (2001) has utilised a classification involving:

1. general equilibrium theory (e.g., Samuelson: 1970);
2. macroeconomics (e.g., Friedman: 1976);
3. microeconomics (e.g., Stigler: 1982);
4. interdisciplinary research (e.g., Becker: 1992); and
5. new methods of economic analysis (e.g., Leontief: 1973).

In both cases, Lindbeck (1985; 2001) acknowledges that because of the overlapping and 'multidimensional nature of scientific contributions' any classification is 'rather arbitrary'.

The classification we have chosen to adopt (see column 7 of Table 1) embraces eleven *broad* fields of study, in line with courses frequently taught within university degree programmes, namely:

1. microeconomics (e.g., Stigler: 1982);
2. macroeconomics (e.g., Friedman: 1976);
3. public economics (e.g., Buchanan: 1986);
4. financial economics (e.g., Merton and Scholes: 1997);
5. development economics (e.g., Schultz and Lewis: 1979);
6. international economics (e.g., Ohlin and Meade: 1977);
7. economic growth (e.g., Solow: 1987);
8. methods of economic investigation (e.g., Stone: 1984);
9. macroeconometrics (e.g., Klein: 1980);
10. econometrics (e.g., Heckman and McFadden: 2000); and
11. economic history (e.g., Fogel and North: 1993)

While the broad fields we have adopted are of some use for rough identification purposes, the reader should bear in mind four main qualifications. First, as is evidenced by reference to the Prize citations (see column 8 of Table 1), it is possible to divide certain

broad fields of study into various subfields. In the case of microeconomics, for example, one can identify such specialist areas as general equilibrium theory and welfare theory (as evidenced by the Prize citation for Hicks and Arrow: 1972), and industrial organisation (as evidenced by the Prize citation for Stigler: 1982). Second, some of the fields of study we have identified could be subsumed within broader categories, thus significantly reducing our eleven-fold classification. Examples include grouping 'economic growth' and 'international economics' as part of 'macroeconomics', and treating 'econometrics' as part of 'methods of economic investigation'. Third, in line with our second qualification, there is inevitably a degree of overlap between certain of the broad fields we have identified. For example, as reflected in the 1999 Prize citation, Mundell's award could be classified under macroeconomics or international economics. Fourth, some Laureates' work classified under a particular heading feeds directly into other areas, again illustrating the problem of overlap. For example, much of the work of Akerlof and Stiglitz who (along with Spence) were jointly awarded the 2001 Prize 'for their analyses of markets with asymmetric information' has provided important microfoundations for new Keynesian macroeconomics. Having offered these qualifications in respect of our preferred classification, it is evident that roughly 58 per cent of the Prize awards have gone to the broad fields of microeconomics and macroeconomics. Three awards have been made in econometrics; two awards in each of financial economics, international economics, economic growth, methods of economic investigation and macroeconomics; and a single award in each of public economics, development economics and economic history.

Laureates' Citizenship

Of the 55 economists who have, to date, been awarded the Prize, 36 have been US citizens. Of these, 27 were born in the USA and nine were foreign born. The fact that just under two-thirds of the awards, as of 2004, have been made to US citizens reflects the leading role the United States has played in pioneering economic research since 1969.

Next in terms of ranking by nationality of recipient are eight Laureates with UK citizenship. Of these, six were born in the UK and two were foreign born. The remaining awards under the heading of citizenship have been distributed as follows. Three awards to citizens of Norway. Two awards to citizens of Sweden. Single awards

to citizens of: the Netherlands, the Soviet Union, France, Germany, India, Canada and Israel.

Affiliations of Laureates (At Time of Award)

Not surprisingly the Laureates were affiliated, at the time of the award, with some of the most famous universities in the world (see column 6 of Table 1). Only 12 universities have ever been associated with more than one award, namely:

1. University of Chicago, USA: nine awards (Friedman, 1976; Schultz, 1979; Stigler, 1982; Miller, 1990; Coase, 1991; Becker, 1992; Fogel, 1993; Lucas, 1995; Heckman, 2000);
2. Harvard University, USA: four awards (Kuznets, 1971; Arrow, 1972; Leontief, 1973; Merton, 1997);
3. University of Cambridge, UK: four awards (Meade, 1977; Stone, 1984; Mirrlees, 1996; Sen, 1998);
4. University of California, Berkeley, USA: four awards (Debreu, 1983; Harsanyi, 1994; McFadden, 2000; Akerlof, 2001);
5. Columbia University, USA: three awards (Vickrey, 1996; Mundell, 1999; Stiglitz, 2001);
6. Massachusetts Institute of Technology, USA: three awards (Samuelson, 1970; Modigliani, 1985; Solow, 1987);
7. Princeton University, USA: three awards (Lewis, 1979; Nash, 1994; Kahneman, 2002);
8. Stanford University, USA: three awards (Sharpe, 1990; Scholes, 1997; Spence, 2001);
9. George Mason University, USA: two awards (Buchanan, 1986; Smith, 2002);
10. University of Oslo, Norway: two awards (Frisch, 1969; Haavelmo, 1989);
11. Yale University, USA: two awards (Koopmans, 1975; Tobin, 1981); and
12. Carnegie-Mellon University, USA: two awards (Simon, 1978; Kydland, 2004).

With respect to the affiliation of the Laureates, two points are worth noting. First, 41 out of the 55 Prize winners (75 per cent) have at the time of the award been affiliated to American universities, again illustrating the leading role the United States has played in pioneering modern economic research. Second, while acknowledg-

ing the rank order of the 12 universities noted above, some economists have made their outstanding contributions while working in universities other than the one where they were in post at the time of the award. For example, Sen held professorial posts at Delhi University (1963–71), the London School of Economics (1971–77), the University of Oxford (1977–87) and Harvard University (1987–98), before joining the University of Cambridge in 1998, the year in which he was awarded the Prize.

Laureates' Doctorates

Again, as one would expect, the Laureates have trained in some of the world's most renowned universities (see column 5 of Table 1). Of the 55 Laureates, 41 received their doctorates from 14 select universities. The 14 universities that have given doctoral training to two or more Laureates are (with names of Laureates and year they were awarded their doctorates in brackets):

1. University of Chicago, USA: seven (Simon, 1943; Stigler, 1938; Buchanan, 1948; Markowitz, 1954; Becker, 1955; Lucas, 1964; Scholes, 1969);
2. Harvard University, USA: five (Samuelson, 1941; Tobin, 1947; Solow, 1951; Spence, 1972; Smith, 1955);
3. Massachusetts Institute of Technology, USA: five (Klein, 1944; Merton, 1970; Mundell, 1956; Akerlof, 1966; Stiglitz, 1966);
4. Columbia University, USA: four (Kuznets, 1926; Arrow, 1951; Friedman, 1946; Vickrey, 1948);
5. Johns Hopkins University, USA: two (Miller, 1952; Fogel, 1963);
6. Princeton University, USA: two (Nash, 1950; Heckman, 1971);
7. University of California, Berkeley, USA: two (North, 1952; Kahneman, 1961);
8. Carnegie-Mellon University, USA: two (Kydland, 1973; Prescott, 1967);
9. University of Cambridge, UK: two (Mirrlees, 1963; Sen, 1959);
10. University of Leiden, The Netherlands: two (Tinbergen, 1929; Koopmans, 1936);
11. University of London, UK: two (Lewis, 1940; Coase, 1951);
12. University of Oslo, Norway: two (Frisch, 1926; Haavelmo, 1946);
13. University of Paris, France: two (Debreu, 1956; Allais, 1949); and
14. University of Stockholm, Sweden: two (Myrdal, 1927; Ohlin, 1924).

Table 1 reveals that 52 of the 55 Laureates have undertaken a doctorate, most of which (34 or 65 per cent) were awarded by American universities.

Forecasting Nobel Memorial Prize Winners in Economics

Anyone trying to forecast a likely future winner of the Nobel Memorial Prize in Economics would be well advised to bear in mind the information contained in Table 1. In summary, of the 55 Prize winners: 65 per cent have been US citizens; 75 per cent have been affiliated to American universities; and 65 per cent have received their PhDs from American universities. As discussed in the case of the Laureates' affiliation, and the place of their doctoral training, there has been a marked concentration on a small number of top American universities.

Additional indicators of potential Nobel Memorial status include high citation counts (for further details, see, for example, Quandt, 1976; Grubel, 1979) and the prior award of prestigious honours. In the latter case, for example, a number of recipients of the John Bates Clark Medal have subsequently been awarded the Nobel Memorial Prize. The Medal – named after the American economist John Bates Clark, 1847–1938 – was instituted in 1947 by the American Economic Association and is awarded every two years to an *American* economist under the age of 40 who is adjudged to have made 'a significant contribution to economic thought and knowledge'. To date, of the 28 economists who have been awarded the John Bates Clark Medal (no award was made in 1953), 11 have subsequently been awarded the Nobel Memorial Prize, namely (with year of Medal award followed by year of Memorial Prize award): Samuelson (1947, 1970); Friedman (1951, 1976); Tobin (1955, 1981); Arrow (1957, 1972); Klein (1959, 1980); Solow (1961, 1987); Becker (1967, 1992); McFadden (1975, 2000); Stiglitz (1979, 2001); Spence (1981, 2001); and Heckman (1983, 2000).¹

In using the award of the John Bates Clark Medal as an indicator of potential Nobel Memorial status, one has to take into account an

¹ Interestingly, the Francis A. Walker Medal (named after the American economist, Francis Walker, 1840–97), which was instituted in 1947 by the American Economic Association and awarded every five years to the living *American* economist who during their career has 'made the greatest contribution to economics', was discontinued in 1981 as the Nobel Memorial Prize had made it superfluous. Unlike the Francis A. Walker Medal, the Nobel Memorial Prize is not restricted to American economists.

average time lag of 22 years between the receipt of the two awards. Given that four winners of the Medal since 1975 have been awarded the Nobel Memorial Prize since 2000, it will be interesting to see which other Medal winners since 1975 (Martin S. Feldstein, 1977; Jerry A. Hausman, 1985; Sanford J. Grossman, 1987; David M. Kreps, 1989; Paul R. Krugman, 1991; Lawrence H. Summers, 1993; David Card, 1995; Kevin M. Murphy, 1997; Andrei Shleifer, 1999; Mathew Rabin, 2001; Steven Levitt, 2003) go on to win the Nobel Memorial Prize. Of course, this does not preclude earlier living winners of the Medal receiving the Nobel Memorial Prize. Here it is interesting to note that the pre-1975 winners are: Kenneth E. Boulding, 1949 (d. 1993); Hendrik S. Houthakker, 1963; Zvi Griliches, 1965 (d. 1999); Marc Leon Nerlove, 1969; Dale W. Jorgensen, 1971; and Franklin M. Fisher, 1973.

For biographical details of many of these major economists, including their principal contributions, the reader is referred to Blaug (1999) and Blaug and Vane (2003).

Controversy Surrounding the Award of a Nobel Memorial Prize in Economics

Ever since the idea of instituting a new award was first put forward, a degree of controversy has surrounded the Nobel Memorial Prize in Economics. At the outset, objections were raised by some members of the Royal Swedish Academy of Sciences that Economics is a 'soft' social science, not sufficiently robust to be awarded a Prize by the Academy on a par with the 'hard' natural sciences of Physics and Chemistry. In addition, there were complaints that Economics does not contribute enough to the 'benefit of mankind' to be given a Prize in memory of Alfred Nobel in line with the views originally expressed in his will. Despite these concerns, the Academy nevertheless agreed to introduce the new Prize.

However, since its inception the award in Economics has been the subject of a number of other controversies. In particular three main criticisms have been made of the Prize. First, concerns have been voiced that the Prize Committee has shown a bias towards, and favoured, the Chicago School of neoclassical economics. As noted, of the 55 awards nine (Friedman, Schultz, Stigler, Miller, Coase, Becker, Fogel, Lucas and Heckman) have been made to faculty members of the University of Chicago and a further four (Simon, Buchanan, Markovitz and Scholes) to economists who received their

doctoral training from the University of Chicago, but who were affiliated to other American universities at the time of the award. Taken together, 24 per cent of all Memorial Prizes in Economics have gone to faculty members, and doctoral-trained economists, of the University of Chicago.

Second, concerns have been expressed that some of the more recent awards are less meritorious than earlier ones. Unlike the original five Nobel Prizes which have been awarded since 1901, the Memorial Prize in Economics only started in 1969. In the first two decades following its inception the Academy needed to clear a long backlog of specific achievements by outstanding economists, many of whom made their seminal contributions in the 1940s and 1950s or even earlier. Eventually this accumulated debt to those who had made important breakthroughs in economics was met either by the award of the Prize, or the death of a potential Prize winner (the Prize cannot be given posthumously). In the latter case some outstanding economists were arguably denied the Prize either because they died before it was instigated (for example, John Maynard Keynes, 1883–1946), or before the debt to them could be honoured (for example, Joan Robinson, 1903–1983).² Given these circumstances it has become more likely, since the 1990s, that the Prize may be awarded to more contemporary economists (notable exceptions being Coase and Vickrey, the 1991 and 1996 Laureates, who received the Prize when they were in their 80s). Perhaps this makes it inevitable that some recent awards are likely to be more contentious than many in the past. Moreover, as Lindbeck (2001) has noted, because the Prize selection committee has opted for a pluralist view of economic research, there will always be adherents of one perspective or another who adopt a critical stance towards work which they find has little sympathy with their own 'brand' of economics.

One recent award which did attract a degree of controversy was that in 1998 to Amartya Sen. A member of the Prize committee had even predicted that 'Sen will never get the prize' (Nasar, 1998). This statement was apparently based on Sen's interest in ethical matters and his rather broad research agenda; both were seen to be at vari-

² See Snowdon and Vane (1999, pp. 94, 127, 148–9, 247 and 283) for the views of five Nobel Memorial Laureates – James Tobin, Milton Friedman, Robert Lucas, Franco Modigliani and Robert Solow – on whether Keynes would have been awarded the first Nobel Memorial Prize in Economics if he had still been alive in 1969.

ance with the neoclassical mainstream in economics. Other commentators have suggested that Sen's award was a form of 'Nobel penance', intended to restore the reputation of the Prize after it had arguably been 'tainted' by the business problems of its recipients the previous year: Myron Scholes and Robert Merton. Scholes and Merton were associated with Long-Term Capital Management, a hedge fund now infamous for prompting the near-collapse of the US financial system in the period just before Sen's award (Pressman and Summerfield, 2000). For eloquent explanations of the clear merit in Sen's award, see Arrow (1999) and Atkinson (1999).

Third, concerns have been voiced that the Nobel Memorial Prize has become an object of such desire, given the status and prestige it affords its recipients and the universities to which they are affiliated, that it results in a competitive and unseemly race. Indeed, the Nobel Memorial Prize has become so well known that it is promoted in the media as the economics equivalent of the annual Oscar awards in cinema: a partial reflection of the modern-day cult of celebrity. Franco Modigliani, the 1985 Laureate, once jokingly commented that 'Nobel Prize winners are to the scientific establishment what cardinals are to the church. They are figures who command reverence and benevolence' (Snowdon and Vane, 1999, p. 257).

Our purpose in mentioning these criticisms is not to adjudicate on their validity but merely to highlight the degree of controversy that has surrounded the Nobel Memorial Prize in Economics since its inception.

Concluding Remarks

In conclusion, let us pose a question which we intend to be neither deep nor frivolous, merely interesting. What advice does our analysis offer to Nobel Memorial aspirants? We would suggest that they should try to meet at least some of the following criteria:

- be a US citizen (65 per cent of Laureates are);
- be affiliated to an American university (75 per cent of Laureates are);
- more specifically be an affiliate of a member of an elite group of 12 universities with a track record of employing Laureates at the time of their elevation (ten of the 12 are in the US);
- have doctoral training at one of 14 select universities with a

track record of training Laureates (of these 14, eight are in the US and have trained more than half of all Laureates);

- first win a prestigious award like the John Bates Clark Medal (39 per cent have so far gone on to a Nobel Memorial award);
- be affiliated to the University of Chicago or train there (nine awards to Chicago affiliates – more than twice as many as the next most successful institutions; seven Chicago doctoral students have subsequently won the Nobel Memorial Prize).

Only four (Hicks, Hayek, Kantorovich and Selten) of the 55 Laureates to date have received their award without meeting any of these criteria. A final apparent criterion is that the recipient should be a man.

Table 1 The Nobel 'Memorial' Laureates in Economics: 1969–2004

Year of award	Laureate(s)	Year and country of birth; citizenship	First degree (university and year)	Higher degree (university and year)	Affiliation (at time of award)	Broad field of study	Prize citation (Nobel Foundation, 2004)
1969	Ragnar A.K. Frisch	b. 1895, Norway (d. 1973)	BA, University of Oslo, 1919	PhD (Mathematical Statistics), University of Oslo, 1926	University of Oslo, Norway	Macroeconometrics	'for having developed and applied dynamic models for the analysis of economic processes'
	Jan Tinbergen	b. 1903, The Netherlands (d. 1994)		Dr (Physics) University of Leiden, 1929	Netherlands School of Economics, The Netherlands		
1970	Paul A. Samuelson	b. 1915, USA	BA, University of Chicago, 1935	PhD, Harvard University, 1941	Massachusetts Institute of Technology, USA	Microeconomics / Macroeconomics	'for the scientific work through which he has developed static and dynamic economic theory and actively contributed to raising the level of analysis in economic science'
1971	Simon S. Kuznets	b. 1901, Russia (d. 1985); US citizen	BA, Columbia University, 1923	PhD, Columbia University, 1926	Harvard University, USA	Economic Growth	'for his empirically founded interpretation of economic growth which has led to new and deepened insight into the economic and social structure and process of development'

Table 1 continued

Year of award	Laureate(s)	Year and country of birth; citizenship	First degree (university and year)	Higher degree (university and year)	Affiliation (at time of award)	Broad field of study	Prize citation (Nobel Foundation, 2004)
1972	John R. Hicks	b. 1904, UK (d. 1989)	BA (Philosophy, Politics and Economics), University of Oxford, 1925		University of Oxford, UK	Microeconomics	'for their pioneering contributions to general economic equilibrium theory and welfare theory'
	Kenneth J. Arrow	b. 1921, USA	BSc (Mathematics), City College, New York, 1940	PhD, Columbia University, 1951	Harvard University, USA		
1973	Wassily Leontief	b. 1906, Russia (d. 1999); US citizen	MA (Social Science), University of Leningrad, 1925	PhD, University of Berlin, 1928	Harvard University, USA	Methods of Economic Investigation	'for the development of the input-output method and for its application to important economic problems'
1974	Gunnar Myrdal	b. 1898, Sweden (d. 1987)	Law Degree, University of Stockholm, 1923	PhD, University of Stockholm, 1927	University of Stockholm, Sweden	Macroeconomics	'for their pioneering work in the theory of money and economic fluctuations and for their penetrating analysis of the interdependence of economic, social and institutional phenomena'
	Friedrich A. von Hayek	b. 1899, Austria (d. 1992); UK citizen	PhD (Law) and PhD (Political Science), University of Vienna, 1921 and 1923		University of Freiburg, West Germany		

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1975	Leonid V. Kantorovich	b. 1912, Russia (d. 1986)	BSc (Mathematics), Leningrad State University, 1930	Dr (Mathematics), Leningrad State University, 1935	Academy of Sciences, Moscow, USSR	Microeconomics	'for their contributions to the theory of optimum allocation of resources'
	Tjalling C. Koopmans	b. 1910, The Netherlands (d. 1985); US citizen	MA (Mathematics and Physics), University of Utrecht, 1933	PhD (Mathematical Statistics), University of Leiden, 1936	Yale University, USA		
1976	Milton Friedman	b. 1912, USA	BA, Rutgers University, 1932	PhD, Columbia University, 1946	University of Chicago, USA	Macroeconomics	'for his achievements in the fields of consumption analysis, monetary history and theory, and for his demonstration of the complexity of stabilization policy'
1977	Bertil G. Ohlin	b. 1899, Sweden (d. 1979)	BA, University of Lund, 1917	PhD, University of Stockholm, 1924	Stockholm School of Economics, Sweden	International Economics	'for their pathbreaking contribution to the theory of international trade and international capital movements'
	James E. Meade	b. 1907, UK (d. 1995)	BA, University of Oxford, 1930	MA, University of Oxford, 1933	University of Cambridge, UK		
1978	Herbert A. Simon	b. 1916, USA (d. 2001)	BA, University of Chicago, 1936	PhD, University of Chicago, 1943	Carnegie-Mellon University, USA	Microeconomics	'for his pioneering research into the decision-making process within economic organizations'

Table 1 continued

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1979	Theodore W. Schultz	b. 1902, USA (d. 1998)	BA, South Dakota State College, 1926	PhD, University of Wisconsin, 1930	University of Chicago, USA	Development Economics	'for their pioneering research into economic development research with particular consideration of the problems of developing countries'
	W. Arthur Lewis	b. 1915, West Indies (d. 1991); UK citizen	BCom, London School of Economics, 1937	PhD, University of London, 1940	Princeton University, USA		
1980	Lawrence R. Klein	b. 1920, USA	BA, University of California, Berkeley, 1942	PhD, Massachusetts Institute of Technology, 1944	University of Pennsylvania, USA	Macroeconometrics	'for the creation of econometric models and their application to the analysis of economic fluctuations and economic policies'
1981	James Tobin	b. 1918, USA (d. 2002)	BA, Harvard University, 1939	PhD, Harvard University, 1947	Yale University, USA	Macroeconomics	'for his analysis of financial markets and their relations to expenditure decisions, employment, production and prices'

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1982	George J. Stigler	b. 1911, USA (d. 1991)	BA, University of Washington, 1931	PhD, University of Chicago, 1938	University of Chicago, USA	Microeconomics	'for his seminal studies of industrial structures, functioning of markets and causes and effects of public regulation'
1983	Gerard Debreu	b. 1921, France; US citizen	Degree in Mathematics, University of Paris, 1946	DSc (Mathematics), University of Paris, 1956	University of California, Berkeley, USA	Microeconomics	'for having incorporated new analytical methods into economic theory and for his rigorous reformulation of the theory of general equilibrium'
1984	J. Richard N. Stone	b. 1913, UK (d. 1991)	BA, University of Cambridge, 1935	MA, University of Cambridge, 1938	University of Cambridge, UK	Methods of Economic Investigation	'for having made fundamental contributions to the development of systems of national accounts and hence greatly improved the basis for empirical economic analysis'
1985	Franco Modigliani	b. 1918, Italy (d. 2003); US citizen	Degree in Law, University of Rome, 1939	PhD, New School for Social Research, New York City, 1944	Massachusetts Institute of Technology, USA	Macroeconomics	'for his pioneering analyses of saving and of financial markets'

Table 1 continued

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1986	James M. Buchanan	b. 1919, USA	BA, Middle Tennessee State College, 1940	PhD, University of Chicago, 1948	George Mason University, USA	Public Economics	'for his development of the contractual and constitutional bases for the theory of economic and political decision-making'
1987	Robert M. Solow	b. 1924, USA	BA, Harvard University, 1947	PhD, Harvard University, 1951	Massachusetts Institute of Technology, USA	Economic Growth	'for his contributions to the theory of economic growth'
1988	Maurice F.C. Allais	b. 1911, France	Ancien élève, École Polytechnique, Paris, 1933	PhD (Engineering), University of Paris, 1949	École Nationale Supérieure des Mines de Paris, France	Microeconomics	'for his pioneering contributions to the theory of markets and efficient utilization of resources'
1989	Trygve Haavelmo	b. 1911, Norway (d. 1999)	Degree in Political Economy, University of Oslo, 1933	PhD, University of Oslo, 1946	University of Oslo, Norway	Econometrics	'for his clarification of the probability theory foundations of econometrics and his analyses of simultaneous economic structures'

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1990	Harry M. Markowitz	b. 1927, USA	BPh (Liberal Arts), University of Chicago, 1947	PhD, University of Chicago, 1954	City University of New York, USA	Financial Economics	'for their pioneering work in the theory of financial economics'
	Merton H. Miller	b. 1923, USA (d. 2000)	BA, Harvard University, 1944	PhD, Johns Hopkins University, 1952	University of Chicago, USA		
	William F. Sharpe	b. 1934, USA	BA, University of California, Los Angeles, 1955	PhD, University of California, Los Angeles, 1961	Stanford University, USA		
1991	Ronald H. Coase	b. 1910, UK	B Com, University of London, 1932	PhD, University of London, 1951	University of Chicago, USA	Microeconomics	'for his discovery and clarification of the significance of transaction costs and property rights for the institutional structure and functioning of the economy'
1992	Gary S. Becker	b. 1930, USA	BA, Princeton University, 1951	PhD, University of Chicago, 1955	University of Chicago, USA	Microeconomics	'for having extended the domain of microeconomic analysis to a wide range of human behaviour and interaction, including nonmarket behaviour'

Table 1 continued

Year of award	Laureate(s)	Year and country of birth; citizenship	First degree (university and year)	Higher degree (university and year)	Affiliation (at time of award)	Broad field of study	Prize citation (Nobel Foundation, 2004)
1993	Robert W. Fogel	b. 1926, USA	BA, Cornell University, 1948	PhD, Johns Hopkins University, 1963	University of Chicago, USA	Economic History	'for having renewed research in economic history by applying economic theory and quantitative methods in order to explain economic and institutional change'
	Douglass C. North	b. 1920, USA	BA, University of California, Berkeley, 1942	PhD, University of California, Berkeley, 1952	Washington University, St Louis, USA		
1994	John C. Harsanyi	b. 1920, Hungary (d. 2000); US citizen	M Pharmacy, University of Budapest, 1944	PhD (Philosophy and Sociology) University of Budapest, 1947; PhD, Stanford University, 1958	University of California, Berkeley, USA	Microeconomics	'for their pioneering analysis of equilibria in the theory of non-cooperative games'
	John F. Nash Jr	b. 1928, USA	BS (Mathematics) Carnegie-Mellon University, 1948	PhD (Mathematics), Princeton University, 1950	Princeton University, USA		

THE NOBEL MEMORIAL PRIZE IN ECONOMICS

1995	Reinhard Selten	b. 1930, Germany	MA (Maths), Johann-Wolfgang-Goethe University, Frankfurt, 1957	PhD (Maths), Johann-Wolfgang-Goethe University, Frankfurt, 1961	Rheinische-Friedrich-Wilhelms-University, Bonn, Federal Republic of Germany	'for having developed and applied the hypothesis of rational expectations, and thereby transformed macroeconomic analysis and deepened our understanding of economic policy'
	Robert E. Lucas Jr	b. 1937, USA	BA (History), University of Chicago, 1959	PhD, University of Chicago, 1964	University of Chicago, USA	Macroeconomics
1996	James A. Mirrlees	b. 1936, UK	MA (Maths), University of Edinburgh, 1957	PhD, University of Cambridge, 1963	University of Cambridge, UK	Microeconomics
	William S. Vickrey	b. 1914, Canada (d. 1996); US citizen	BS (Maths), Yale University, 1935	PhD, Columbia University, 1948	Columbia University, USA	'for their fundamental contributions to the economic theory of incentives under asymmetric information'
1997	Robert C. Merton	b. 1944, USA	BS (Engineering and Maths), Columbia University, 1966	PhD, Massachusetts Institute of Technology, 1970	Harvard University, USA	'for a new method to determine the value of derivatives'
	Myron S. Scholes	b. 1941, Canada; US citizen	BA, McMaster University, 1961	PhD, University of Chicago, 1969	Stanford University, USA	

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1998	Amartya K. Sen	b. 1933, India	BA, Calcutta University, 1953	PhD, University of Cambridge, 1959	University of Cambridge, UK	Microeconomics	'for his contributions to welfare economics'
1999	Robert A. Mundell	b. 1932, Canada	BA (Economics and Slavonic Studies), University of British Columbia, 1953	PhD (Industrial Economics), Massachusetts Institute of Technology, 1956	Columbia University, USA	Macroeconomics – International Economics	'for his analysis of monetary and fiscal policy under different exchange rate regimes and his analysis of optimum currency areas'
2000	James J. Heckman	b. 1944, USA	BA (Maths), Colorado College, 1965	PhD, Princeton University, 1971	University of Chicago, USA	Econometrics	'for his development of theory and methods for analysing selective samples'
	Daniel L. McFadden	b. 1937, USA	BS (Physics), University of Minnesota, 1957	PhD (Behavioural Science), University of Minnesota, 1962	University of California, Berkeley, USA		'for his development of theory and methods for analysing discrete choice'

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2001	George A. Akerlof	b. 1940, USA	BA, Yale University, 1962	PhD, Massachusetts Institute of Technology, 1966	University of California, Berkeley, USA	Microeconomics	'for their analyses of markets with asymmetric information'
	A. Michael Spence	b. 1943, USA	BA (Philosophy), Princeton University, 1966	PhD, Harvard University, 1972	Stanford University, USA		
	Joseph E. Stiglitz	b. 1943, USA	BA, Amherst College, 1964	PhD, Massachusetts Institute of Technology, 1966	Columbia University, USA		
2002	Daniel Kahneman	b. 1934, Israel; US/Israeli citizen	BA (Psychology and Maths), Hebrew University, Jerusalem, 1954	PhD (Psychology), University of California, Berkeley, 1961	Princeton University, USA	Microeconomics	'for having integrated insights from psychological research into economic science, especially concerning human judgment and decision-making under uncertainty'
	Vernon L. Smith	b. 1927, USA	BSEE, California Institute of Technology, 1949	PhD, Harvard University, 1955	George Mason University, USA		'for having established laboratory experiments as a tool in empirical economic analysis, especially in the study of alternative market mechanisms'

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2003	Robert F. Engle	b. 1942, USA	BS (Physics), Williams College, 1964	PhD, Cornell University, 1969	New York University, USA	Econometrics	'for methods of analysing economic time series with time-varying volatility (ARCH)'
	Clive W.J. Granger	b. 1934, UK	BA (Maths), University of Nottingham, UK, 1955	PhD (Stats), University of Nottingham, UK, 1959	University of California, San Diego, USA		'for methods of analysing economic time series with common trends (cointegration)'
2004	Finn E. Kydland	b. 1943, Norway	Siviløkonom (Bus. Admin.), Norwegian School of Economics, 1968	PhD, Carnegie-Mellon University, 1973	Carnegie-Mellon University; University of California, Santa Barbara, USA	Macroeconomics	'for their contributions to dynamic macroeconomics: the time consistency of economic policy and the driving forces behind business cycles'
	Edward C. Prescott	b. 1940, USA	BA (Maths), Swarthmore College, 1962	PhD, Carnegie-Mellon University, 1967	Arizona State University, USA		