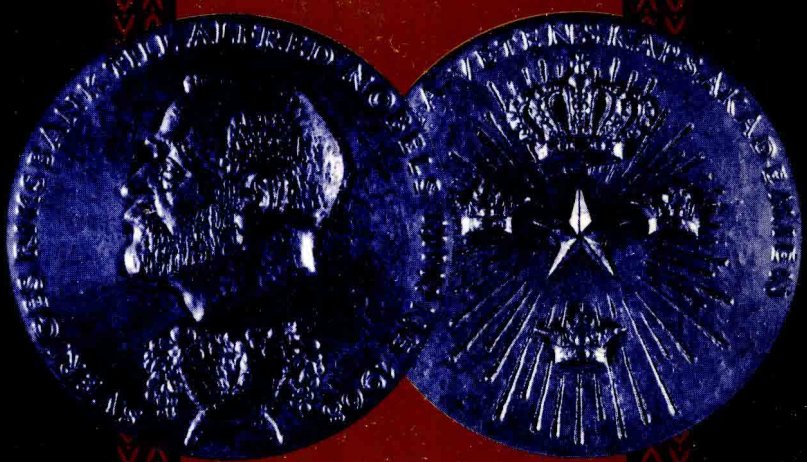
NOBEL LECTURES

ECONOMIC SCIENCES



1981–1990

World Scientific

NOBEL LECTURES

INCLUDING PRESENTATION SPEECHES
AND LAUREATES' BIOGRAPHIES

ECONOMIC SCIENCES

1981–1990

The Sveriges Riksbank (Bank of Sweden) Prize
in Economic Sciences in Memory of Alfred Nobel

EDITOR

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NOBEL LECTURES IN ECONOMIC SCIENCES (1981–1990) — THE SVERIGES RIKSBANK (BANK OF SWEDEN) PRIZE IN ECONOMIC SCIENCES IN MEMORY OF ALFRED NOBEL

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PRIZE IN ECONOMIC SCIENCES IN MEMORY OF ALFRED NOBEL

Sveriges Riksbank (Bank of Sweden) at their tercentenary in 1968 instituted an Alfred Nobel Memorial Prize in Economic Sciences and placed an annual amount at the disposal of the Nobel Foundation as basis for a prize to be awarded by the Royal Swedish Academy of Sciences. Nobel Prize rules will, mutatis mutandis, be followed regarding nomination of candidates, prize adjudication, prize award and prize presentation. The latter takes place on Nobel Day, December 10, each year. The prize amount will equal that of a Nobel Prize for the same year. Special Statutes and Regulations (valid from January 1, 1969) have been issued for this Alfred Nobel Memorial Prize in Economic Sciences.

Foreword

Since 1901 the Nobel Foundation has published annually "Les Prix Nobel" with reports from the Nobel Award Ceremonies in Stockholm and Oslo as well as the biographies and Nobel lectures of the laureates. In order to make the lectures available to people with special interests in the different prize fields the Foundation gave Elsevier Publishing Company the right to publish in English the lectures for 1901–1970, which were published in 1964 –1972 through the following volumes:

Physics 1901–1970	4 vols.
Chemistry 1901–1970	4 vols.
Physiology or Medicine 1901–1970	4 vols.
Literature 1901–1967	1 vol.
Peace 1901–1970	3 vols.

Elsevier decided later not to continue the Nobel project. It is therefore with great satisfaction that the Nobel Foundation has given World Scientific Publishing Company the right to bring the series up to date.

The Nobel Foundation is very pleased that the intellectual and spiritual message to the world laid down in the laureates' lectures will, thanks to the efforts of World Scientific, reach new readers all over the world.

Lars Gyllensten
Chairman of the Board

Stig Ramel
Executive Director

Stockholm, June 1991

Preface

In conjunction with its tercentenary celebration in 1968, the Central Bank of Sweden (Sveriges Riksbank) instituted in cooperation with the Royal Swedish Academy of Sciences, a new award, "the Central Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel". The award, established as an economic commitment by the bank in perpetuity, is given according to the same principles and rules as the original Nobel Prizes. The selection of candidates for the Prize and the choice of the laureate is the responsibility of the Royal Swedish Academy of Sciences, which also decides on the Nobel laureates in Physics and Chemistry.

In connection with the Prize awarding ceremony in Stockholm in December each year, the laureates give special Nobel Lectures in which they try to summarize their own main contributions to their subjects. A brief and elementary summary of their work is also given in the presentation speech by a member of the Academy at the Prize Awarding ceremony. These Nobel Lectures, given by the laureates in Economics, and the presentation speeches have been collected in two volumes together with the biographies of the laureates. The previous volume covered the years from 1969 to 1980. The present volume covers the years 1981 to 1990.

In 1981, the Prize was awarded to Professor James Tobin of Yale University for his analysis of how changes in financial markets, i.e., the markets for money and financial assets, influence the real markets where decisions are taken about consumption, production and investment. In the following year, Professor George Stigler received the Prize for his contributions to our understanding of markets, information and regulations. While these two laureates were awarded their Prizes for work that were quite close to policy, the laureate in 1983, Gerard Debreu of California University, Berkeley, was awarded the Prize for basic research. His studies in the existence of competitive equilibria used advanced mathematics in order to show under what conditions the basic microeconomic model is logically consistent.

One of the basic tools for economic analysis is the Standard National Accounts and Professor Richard Stone of Cambridge University was awarded the Prize in 1984 for his important work in developing such accounts. The statistical databases contained in the national accounts have been used by many other laureates in their research. For example, Professor Franco Modigliani of MIT, used national income data to test and estimate the basic factors behind household savings, and in particular the lifetime savings hypothesis. He was awarded the Prize for this research in 1985.

While most of the laureates were awarded their Prizes for research concerning allocation of resources through markets, the Prize in 1986 was awarded to James Buchanan from the Centre for Study of Public Choice for his studies of allocation of resources through the public sector. He was followed in 1987 by Robert Solow

from MIT, who was awarded the Prize for his studies of economic growth.

In 1988 Professor Maurice Allais was awarded the Prize for his theoretical contributions to our understanding of the role of markets for efficient allocation of resources. In 1989 this was followed by a Prize to Tryggve Haavelmo for his development of statistical methods that can be used to empirically estimate the behaviour on markets. Finally, in 1990 the Prize was awarded jointly to Harry Markowitz, City University of New York, Merton Miller, University of Chicago, and William Sharpe, Stanford University for their studies of markets for financial assets.

Looking at the decade of 1980's, one finds that the Prize has been awarded twice to basic theoretical research — Gerard Debreu and Maurice Allais, twice for methodological contributions — Richard Stone and Tryggve Haavelmo, three times for studies in macroeconomics — James Tobin, Franco Modigliani and Robert Solow, twice for contributions in microeconomics — George Stigler, Harry Markowitz, Merton Miller, and William Sharpe, and once for studies in the economics of the public sector — James Buchanan. Most of the traditional subfields of economics have therefore been honoured with Prizes during this decade.

Karl-Göran Mäler
Editor

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for his analysis of financial markets and their relations to expenditure decisions, employment, production and prices

THE PRIZE FOR ECONOMIC SCIENCE IN MEMORY OF ALFRED NOBEL

Speech by Professor ASSAR LINDBECK of the Royal Academy of Sciences. Translation from the Swedish text.

Your Majesties, Your Royal Highnesses, Ladies and Gentlemen,

One of the most common *prejudices* among ordinary people concerning economics is that it is mainly about money and finance. However, in the case of this year's prize in economics, this conception is in fact not too far from the truth.

The Laureate of this year, James Tobin of Yale University, has been awarded the prize for his analysis of how changes in financial markets, i.e. the markets for money and financial assets, influence the real markets where decisions are taken about consumption, production and investment. This is an important issue because the effects on the economy of economic policy, monetary as well as fiscal policy, are to a large extent transmitted via the monetary and financial markets.

The starting point of Professor Tobin's analysis is a mathematically formulated risk theory of the allocation by individual firms, institutions and households of their portfolios among different assets—such as cash, bank deposits, bonds, shares and physical assets of various types. This year's prize gives him in fact a unique opportunity to practice his theories very concretely for himself!

The individual agents in Tobin's portfolio theory are assumed to base their decisions on the yield and risk that are connected with the entire portfolio of assets and liabilities. By adding the portfolio decisions of all agents, we obtain the total demand and supply of various types of assets for society as a whole. By way of an analysis of the interaction between demand and supply, it is then possible to explain equilibrium prices and interest rates for the various assets, such as bonds and shares.

The next step in the analysis is to study how changes in various financial markets—for instance due to government budget deficits or changes in exchange rates or exchange reserves—are transmitted to decisions on consumption and investment. A particular feature of Tobin's analysis of these so-called "transmission mechanisms" is that there is assumed to exist a very *broad* surface of contact between financial and real markets. The whole spectrum of claims, liabilities, market prices and interest rates on *all* types of assets, in principle, plays a part in the transmission of impulses from monetary and financial markets to real markets.

Of particular interest in Tobin's analysis is the way in which changes in financial markets influence investment in buildings and equipment. Professor Tobin's theory goes back to important contributions by economists like Knut Wicksell and John Maynard Keynes, according to whom investment decisions are determined on the basis of the relation between capital costs and expected

return on real investment. One of Professor Tobin's main contributions is to give this old theory both a more solid theoretical structure and an empirically and statistically more useful formulation than earlier.

The letter "q" has in this connection become a symbol for Tobin's portfolio theory. If someone in the audience on a visit to Yale University would see some students running around in T-shirts with the letter small "q" on the front, you could conclude that you are looking at graduate students in economics. "q" simply expresses the *ratio* between the market value of a physical asset on the one hand, and the cost of producing this asset all over again, on the other. For instance, if in a certain situation the market value in the stock market of a firm is lower than the cost of reproducing the same type of physical asset of the firm, so that Tobin's q is smaller than *unity*, it will be more profitable for firms to buy each other out than to invest in new buildings and equipment.

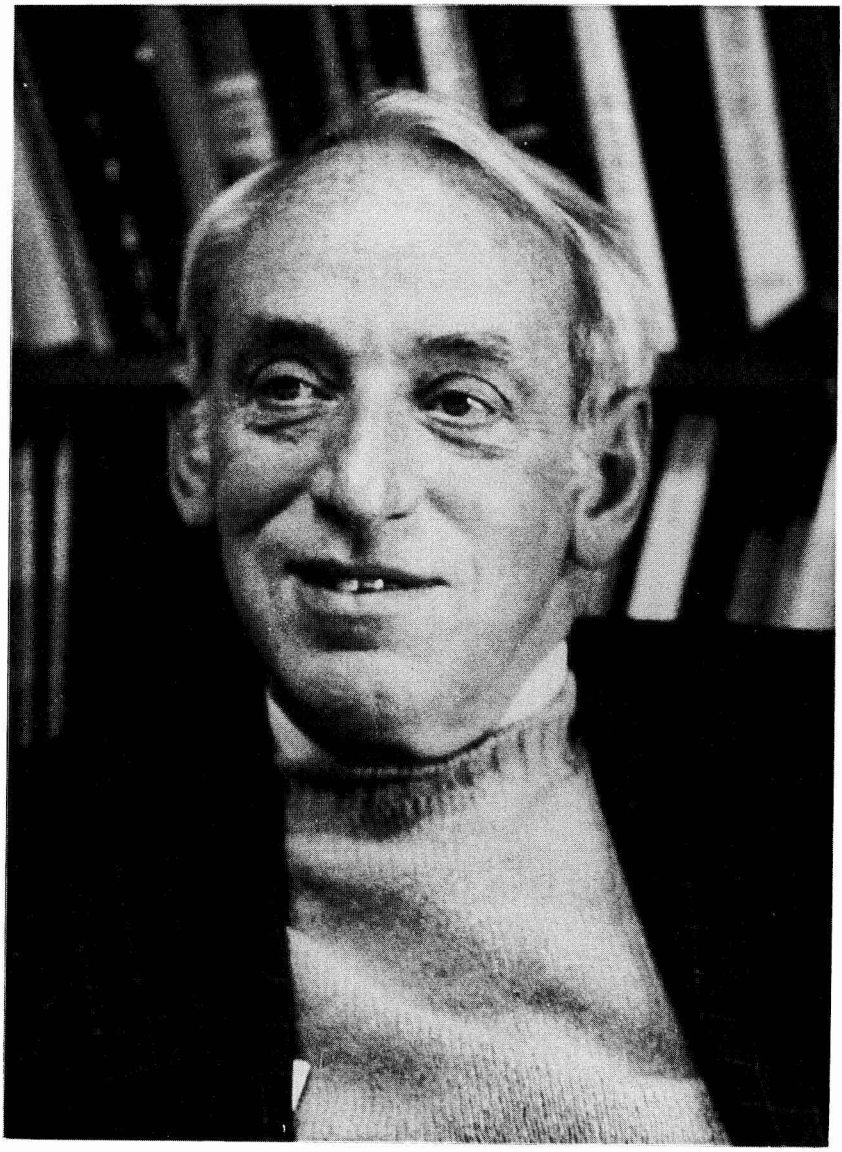
One of the economic problems of many countries today, not least for Sweden in the seventies, has been exactly that the market value of firms as recorded in the stock market, has become too small as compared to the costs of building new plants. The result has been low investment and low economic growth rate. Tobin's analysis in fact gives a pedagogically simple and convincing picture of the important part played by the stock market as a source of information and a mechanism of allocating saving and investment in the national and international economy.

The last step in Tobin's analysis is to explain how changes in consumption and investment influence national income and how this change in turn is divided into changes in production volume and prices. In this context Professor Tobin has discussed the consequences of stickiness of wages, and therefore also of prices, which means that a generally restrictive economy policy in the short run results in a fall in the production volume and the level of employment rather than in the rate of increase in wages and prices. As we know, this is a basic dilemma of economic policy: the disadvantages in the form of cutbacks in production and employment come first, while the benefit in the form of reduced inflation comes later.

Professor Tobin: You have laid a solid, and empirically applicable, foundation for studies of the functioning of monetary and financial markets, and you have also shown how changes in these markets influence the magnitudes of consumption, investment, production, employment and economic growth.

Your achievements are characterized by a rare combination of keen insight, analytical skill and a good common sense for practically relevant problems. Your scientific contribution is well anchored in the tradition of central economic theory, and your originality is a natural part of the continuous long-term accumulation of basic scientific knowledge in economics.

It is a great pleasure to convey to you the congratulations of the Swedish Royal Academy of Sciences, and to ask you to accept from the hands of His Majesty the King the 1981 Prize in Economic Science dedicated to the memory of Alfred Nobel.



James Tobin

JAMES TOBIN

I studied economics and made it my career for two reasons. The subject was and is intellectually fascinating and challenging, particularly to someone with taste and talent for theoretical reasoning and quantitative analysis. At the same time it offered the hope, as it still does, that improved understanding could better the lot of mankind. For me, growing up in the 1930s, the two motivations powerfully reinforced each other. The miserable failures of capitalist economies in the Great Depression were root causes of worldwide social and political disasters. The depression also spelled crisis for an economic orthodoxy unable either to explain events or prescribe remedies. The crisis triggered a fertile period of scientific ferment and revolution in economic theory. The excitement reached beginning undergraduate students like myself. In 1936 at the start of my sophomore year, a young tutor at Harvard College, Spencer Pollard, suggested we read together a new book by an English economist J. M. Keynes, and I was hooked.

My mother and father had paved the way. Margaret Edgerton Tobin, now in her ninetieth year, was a social worker who, after a sixteen year interruption for marriage and family, resumed her career in the relief emergency of 1932 and directed the family service agency of Champaign-Urbana, Illinois for the next quarter century. From her first-hand accounts I learned of the human suffering of unemployment and poverty. Louis Michael Tobin (1879–1943), a journalist, was from my early childhood the publicity director for University of Illinois athletics. The fortunes of Illinois sports teams were a big thing in our lives, to be sure. My father also happened to be an intellectual, as learned, literate, informed, and curious as anyone I have known. Unobtrusively and casually, he was my wise and gentle teacher. In the home territory of the arch-conservative *Chicago Tribune*, our home was sprinkled with alien periodicals like the *Nation, New Republic*, and Mencken's *American Mercury*. In our town and among my mother's relatives in Wisconsin, my parents, and in time I and my young brother too, were known for eccentric but well-argued political views. I cast the only straw vote for Roosevelt in 1932 in a poll of a sophomore high school class mostly composed of university faculty children.

I was born in Champaign in 1918. From the neighborhood elementary and intermediate schools I went to the University High School in the twin city Urbana. The school was operated by the university's College of Education primarily to give its students practical training in teaching. The master teachers who guided the trainees also gave us a marvelous education. The graduates number only 30 to 40 annually, but they win many scholarships in national competition. Two alumni, Philip Anderson and Hamilton Smith, are Nobel

laureates. Ironically my award this year was announced coincidentally with news that the school might be closed for lack of funding.

For me one good thing about Uni-High was that in a small school I could earn a place on the varsity basketball team, fulfilling athletic ambitions that had seemed beyond reach in my childhood. Another was that it prepared me exceptionally well for Harvard, even though neither the school nor I ever thought that mid-Western teen-agers might go to a prestigious expensive Eastern college a thousand miles away. I happily took for granted that I would attend the very good local university and probably go on to its law school. Harvard was my father's idea. By chance, President James B. Conant of Harvard was just then inaugurating national full-cost scholarships designed to diversify the geographical, scholastic, and social sources of the student body, and he was starting with the mid-Western states. All this my father learned because he habitually read the *New York Times* in the public library. So I wrote in June three days of entrance exams for which I had neither received nor made any special preparation. I learned the amazing good news in August, and in September 1935 on the train to Boston I left the mid-West for the first time.

Four years later I received my Harvard baccalaureate. My proud parents attended the Commencement, their first trip East since their honeymoon in New York in 1916. After the outbreak of war in 1939 washed out the Wanderjahr for which I had been granted a travelling fellowship, I spent the next two years as a graduate student at Harvard. Those six years were a great experience. My fellow students, many of them my lifelong friends, were of diverse backgrounds, interests, and talents. My teachers ranged from Alfred North Whitehead, about to retire, to eager young instructors. I joined the intense political debate and activity that absorbed the campus in those critical pre-war years. In economics Harvard, the center of the intellectual ferment of the day, was enjoying a golden age. Joseph Schumpeter, Alvin Hansen[1], Seymour Harris[2], Edward Chamberlin, Edward Mason, Gottfried Haberler, Sumner Slichter, and Wassily Leontief were the professors who meant most to me. In addition there was a superb assemblage of young faculty and graduate students, Paul Samuelson, Lloyd Metzler, Paul Sweezy, J. K. Galbraith, Abram Bergson, Richard Musgrave, Richard Goodwin, Richard Gilbert, Lloyd Reynolds, John P. Miller and others who would be leaders of the profession in later years.

I left Harvard in the spring of 1941. Ed Mason, for whose seminar I had written a paper on the uses of statistical forecasting in economic mobilization, steered me to a job in Washington in a new agency charged with restricting civilian uses, e. g. in autos and other consumer durables, of metals and other materials needed for growing defense production. Aside from Melvin De Chazeau and Arthur R. Burns, we economists were all youngsters, suddenly

[1] J. Tobin, "Hansen and Public Policy," *Quarterly Journal of Economics*, Vol. XC, Feb. 1976, pp. 32–37.

[2] J. Tobin, Tribute at the Memorial Service for Seymour Harris, Harvard University, Dec. 12, 1974, privately printed in Berkeley, California, 1976.