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NOBEL PRIZES IN ECONOMIC SCIENCES

Introduction

The official name of the Nobel Prize is «The Sveriges Riksbank (Bank of Sweden) Prize in Economic Sciences in Memory of Alfred Nobel». Under his will, signed on November 27, 1895, a year before his death, Alfred Nobel conferred his estate to attain some of the goals to which he had devoted so much of his life. Nobel stipulated in his will that most of his fortune, more than SKr 31 million (today approximately SKr 1.500 million or Euro 163.576.880) should be converted into a fund with investments. The income from the investments was to be distributed yearly in five equal parts as prizes to those who had most helped humankind during the preceding year. A prize was to be awarded in each of five fields: physics, chemistry, physiology (or medicine), literature and peace.

A prize in economic sciences was established through the Bank of Sweden in 1968. In conjunction with its tercentenary celebrations in 1968, the Bank of Sweden instituted "The Central Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel" on the basis of an economic commitment by the bank in perpetuity. The Royal Swedish Academy of Sciences was designated to make the award according to the same principles as for the Nobel prizes that have been awarded since 1901.

The procedures for selecting the laureates are based on the same principles as for the other Nobel prizes. Each year the Academy receives some 250 nominations, usually covering a little more than one hundred nominees. The five to eight members of the Economics Prize Selection Committee of the Academy commissions expert studies of the potential candidates. The Prize Committee

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presents its review and award proposal to the Social Science Class of the Academy in the form of a report, with an extensive survey of the main candidates who are considered for a prize. The report presents arguments in support of the proposal and includes all the solicited expert studies. Finally, the entire Academy meets to make the final choice.

The Prizes are subdivided into the following areas of economic sciences: general equilibrium theory, macroeconomics, microeconomics, interdisciplinary research, new methods of economic analysis.

The very first Nobel prize in economic sciences was awarded in 1969 divided between Ragnar Frisch (Norway, University of Oslo) and Jan Tinbergen (Netherlands School of Economics, Rotterdam) for having developed and applied dynamic models for the analysis of economic processes, for their pioneering work on econometric model building, i.e., the integration of economic theory and statistical methods. While Frisch developed general methods of dynamic and econometric analysis, Tinbergen pioneered in applying such methods empirically. Frisch and Tinbergen were also instrumental in developing a formalized theory of the relation between instruments and targets of economic policy. Frisch and Tinbergen gave these theories a form that was favorable for empirical quantification and statistical testing. Frisch based his analysis partly on a system of national accounts for Norway, the so-called «oekosirk system» (income and expenditure flows), Tinbergen's main achievement was in making rigorous statistical tests to prove the realism of alternative business cycle theories.

The first Nobel prizes were given for special performances in the area of macroeconomics. In 1970, American Paul A. Samuelson from the Massachusetts Institute of Technology (MIT) was awarded the second prize 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. In the following 20 years, the prizes were also given in the area of macroeconomics. Only since the 1990s years, performances have been honored in the area of microeconomics. In 1992 the American economist Gary S. Becker from Chicago received the Nobel prize for having extended the domain of microeconomic analysis to a wide range of human behaviour and interaction, including nonmarket behaviour. Gary Becker has been working on the borderline between economics and sociology, researching the family in particular. He has not only analyzed the "economic" behavior of families – labor supply, consumption, household production and household saving – but also behavior that has not earlier been much researched by economists, such as education, marriage, childbirth, and divorce. He has shown how both economic considerations influence choice in these areas and analyzed "social interaction" between individuals outside the market system.

The Nobel prizes in Economics were given for the analyses of markets with asymmetric information. Former models in the area of microeconomics assumed that all market participants are equally well informed. The reality is how-

ever usually different. Therefore, a low-quality product can oust high quality products.

The 2001 «Prize in Economic Sciences in Memory of Alfred Nobel» was divided between George A. Akerlof from the University of California at Berkeley, and Michael A. Spence from the Stanford University and to Joseph E. Stiglitz from the Columbia University. During the 1970s, these laureates laid the foundation for the general theory of markets with asymmetric information. Applications have been abundant ranging from traditional agricultural markets to modern financial markets. The scientists' contributions form the core of modern information economics.

The acknowledgment of microeconomics has several reasons. Modern models to the finding of decisions are no longer abstract. Since the 1980's years the models adapt themselves to the reality. The meaning of microeconomics increased. In the 1990's years over half of the Nobel Prizes were given to economists who analyzed the behavior of individuals on goods-markets and finance-markets. At that time the world faced new problems world-wide: high unemployment, deregulation of markets, and reforms of social systems. Models became necessary to find clear-cut decisions in these areas.

What are markets with asymmetric information?

In our life or in the economy many markets are characterized by asymmetric information: actors in the part of buyers on one side of the market are much less informed than sellers on the other side. For example, managers and boards know more than shareholders about the firm's profitability; prospective clients know more than insurance companies about their accident risk; tenants know more than the landowner about harvesting conditions and their own work effort; the borrower knows more than the lender about his repayment prospects. On the labor market, a specialist knows his abilities better than an employer, whose manpower the latter seeks. We can find asymmetric information on different markets: on markets for technical goods, on for markets for foods, on market for educational proposition, on the labor market, on the insurance market, on the finance market and capital market.

Akerlof's article, «The Market for Lemons: Quality Uncertainty and the Market Mechanism» analyzes a market for a product where sellers are better informed than buyers about the quality of the good, for example the market for used cars. For example, assume that a lot of cars is sold and is available in two qualities, low and high. Each buyer is potentially interested in purchasing one unit, but cannot observe the difference between the qualities of two cars at the time of the purchase. All buyers have the same valuation of the two qualities. Every car has the same price. Only the seller knows the quality of the cars he

sells and gets the value from the difference of the two qualities. If there were separate markets for low and high quality, every price between values of low-quality v^l and low-quality worth unit w^l would induce beneficial transactions for both parties in the market for low quality, as would every price between values of high-quality v^h and high-quality worth w^h in the market for high quality. This would amount to a socially efficient outcome: all gains from trade would be realized. But if the markets are not regulated and buyers cannot observe product quality (for example, the used cars), unscrupulous sellers of low-quality cars would choose to trade on the market for high quality. In practice, the markets would merge into a single market with one and the same price for all cars. Suppose that this occurs and that the sellers' valuation of high quality exceeds the consumers' average valuation. The result is: sellers with high-quality cars would thus exit from the market, leaving only an adverse selection of low-quality goods, the «lemons». Since then, «lemons» (a colloquialism for defective cars) has become a well-known metaphor in economist's vocabulary. What is applied to the market for the used cars can also be applied for many other goods.

In a later article, «The Economics of Caste and the Rat Race and Other Woeful Tales», Akerlof enters into a more thorough discussion of the significance of informational asymmetries in widely differing contexts, such as the caste system, factory working conditions and sharecropping. For example, on the assembly line in a factory, the speed of the conveyor belt acts as an indicator of the workers' ability, and can therefore be used as an instrument to distinguish between workers of different abilities; in the case of sharecropping, where tenancy is repaid by a fixed share of the harvest, a tenant's volume of production acts as an indicator of his work effort on the farm. Apart from his work on asymmetric information, Akerlof has been innovative in enriching economic theory with insights from sociology and social anthropology.

The research of Michael Spence refers to the labor market and the educational market. Spence's article «Job Market Signaling» and his book «Market Signaling» both deal with education as a signal in the labor market. If an employer cannot distinguish between high- and low-productivity labor when hiring new workers, the labor market might collapse into a market where only those with low productivity are hired at a low wage – this is analogous to the adverse selection outcome in Akerlof's market where only lemons remain.

Assume that job applicants can acquire education before entering the labor market. How can employers assess the future workers? Although employers cannot directly observe the workers' productivity, they can observe the workers' educational level. Education is measured on a scale with levels, and the necessary cost – in terms of effort, expenses or time – to reach each level is lower for high-productivity job applicants. On the other hand, in practice the job applicant thus chooses as lower educational level as possible. As a result Spence argues that instead of a market failure, where high-productivity individuals remain outside of the market, workers participate in the labor market and acquire a costly education solely to distinguish themselves from low-productivity job applicants.

Spence also demonstrates the existence of other equilibria, e.g., one where no applicant acquires education. Assume that employers do not expect education to be a productivity signal, i.e., they expect all job applicants, regardless of education, to have the average productivity on the market. Employers then offer this wage to all job applicants, and their expectations are self-fulfilling, as it is optimal for all applicants to choose the minimum level of education.

Joseph Stiglitz analyzes the situation with asymmetric information on the insurance market. In analogy with Akerlof's buyer and Spence's employer, who do not know the sellers' quality or the job applicants' productivity, the insurance companies cannot observe the individual policyholders' risk. From the perspective of an insurance company, policyholders with a high probability p^H of injury are of „low quality», while policyholders with a low probability p^L are of „high quality». In analogy with the previous examples of Akerlof and Spence, there is perfect competition in the insurance market. Stiglitz's article with Rothschild «Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information» is a natural compliment to the earlier works of Akerlof and Spence.

Stiglitz and Rothschild establish that equilibria may be divided into two main types: pooling and separating. In a pooling equilibrium, all individuals buy the same insurance, while in a separating equilibrium they purchase different contracts. They show that their model has no pooling equilibrium. The reason is that in such an equilibrium an insurance company could profitably cream-skin the market by instead offering a contract that is better for low-risk individuals but worse for high-risk individuals. The only possible equilibrium is a unique separating equilibrium, where two distinct insurance contracts are sold in the market. One contract is purchased by all high-risk individuals, and provides full coverage at a relatively high premium. The second contract is purchased by all low-risk individuals and combines the lower premium with only partial coverage. In result, each customer chooses between one contract without any deductible, and another contract with a lower premium and a deductible.

The article of Stiglitz and Rothschild has been very influential. In particular, their classification of equilibria has become a paradigm: pooling and separating equilibria are now standard concepts in microeconomic theory in general and in information economics in particular.

Stiglitz has made many other contributions regarding markets with asymmetric information. In his works, often with coauthors, he has time and again pointed out that economic models may be quite misleading if they disregard informational asymmetries. In the paper «Credit Rationing in Markets with Imperfect Information», Stiglitz with A. Weiss analyze credit markets with asymmetric information. They show that to reduce losses from bad loans, it may be optimal for banks to ration the volume of loans instead of raising the lending rate, as would be predicted by classical economic analysis. Since credit rationing is so common, these insights were important steps towards a more realistic theory of credit markets.

What is Specific in Research of Prizewinner for the Year 2001?

Akerlof, Spence and Stiglitz's analyses of markets and information asymmetries are fundamental to modern microeconomic theory. This research gave answers to such questions: how the information is distributed between market participants? How does the different distribution of information influence on working of a market? Their analyses showed weak positions of the neoclassical theories. The neoclassical theories defended the free competition on the market and stated that all market participants have the same access to information. The three scientists have caused a revolution in economics 30 years ago. This research has furthered the understanding of phenomena in real markets. Moreover, their models have been used to explain the emergence of many research institutions that counteract the negative effects of informational asymmetries.

In the Press Release of the Nobel-Foundation we can find the following characteristics. «George Akerlof demonstrated how a market where sellers have more information than buyers about product quality can contract into an adverse selection of low-quality products. He also pointed out that informational problems are commonplace and important. Akerlof's pioneering contribution thus showed how asymmetric information of borrowers and lenders may explain skyrocketing borrowing rates on local Third World markets; but it also dealt with the difficulties for the elderly to find individual medical insurance and with labor-market discrimination of minorities». For example, Akerlof showed the repression of high-quality products through low-quality products at the market with used cars. It is an example of «adverse selection» at the markets.

The connection between high borrowing rates on the credit markets and asymmetric information is also currently seen in Ukraine. The level of borrowing rates for credits is very much higher than that in the European Union. The economy reacted to the phenomenon of asymmetric information with the development of consulting firms and advisor companies for business. For consumers, special institutes test the quality of products and compare their quality and prices. New businesses look for the same product with the lowest price for customers.

«Michael Spence identified an important form of adjustment by individual market participants, where the better informed take costly actions in an attempt to improve on their market outcome by credibly transmitting information to the poorly informed. Spence showed when such signaling will actually work. While his own research emphasized education as a productivity signal in job markets, subsequent research has suggested many other applications, e.g., how firms may use dividends to signal their profitability to agents in the stock market.»

In the last years, the job markets came in movement. New technologies necessitate new vocations with new contents in education. Some traditional vo-

cations lose their meaning. Only the utilization of Internet possibilities requires specialists with new knowledge. Today, many companies seek specialists in information and communication technologies.

«Joseph E. Stiglitz clarified the opposite type of market adjustment, where poorly informed agents extract information from the better informed, such as the screening performed by insurance companies dividing customers into risk classes by offering a menu of contracts where higher deductibles can be exchanged for significantly lower premiums. In a number of contributions about different markets, Stiglitz has shown that asymmetric information can provide the key to understanding many observed market phenomena, including unemployment and credit rationing.»

As a result of their research, Michael Spence and Joseph Stiglitz came to the conclusion: regulating measures of the state to consumers are unnecessary. The market offers the explanation with used cars. The salespeople of high-quality used cars give the customer an extensive guarantee. A signal is given to the customer as follows: the used car has a high quality. Through comprehensive information, the high-quality products can become generally accepted. The low-quality products find no buyers.