

Companies, markets, and management of common property. On the Nobel Prize in Economics awarded to Elinor Ostrom and Oliver E. Williamson*

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Resum. Oliver Williamson ha argumentat que els mercats i les organitzacions jeràrquiques, com les empreses, representen estructures alternatives de governança que difereixen en els enfocaments per a resoldre els conflictes d'interès. L'inconvenient dels mercats és que sovint impliquen el regateig i el desacord. L'inconvenient de les empreses és que l'autoritat, que mitiga la contenció, pot abusar-se. Els mercats competitius funcionen relativament bé perquè els compradors i els venedors poden recórrer a altres socis comercials en cas de dissidència. Però quan la competència del mercat és limitada, les empreses són més adequades per a la resolució de conflictes dels mercats. Una predicció clau de la teoria de Williamson, que també ha rebut el suport empíricament, és, per tant, que la propensió dels agents a realitzar les seves transaccions dins les empreses respectives augmenta segons el grau d'especificitat dels béns involucrats en la relació entre les parts contractants. Elinor Ostrom ha desafiat la creença convencional que la propietat comuna està mal gestionada i que ha de ser regulada per autoritats centrals o privatitzada. D'acord amb nombrosos estudis sobre les poblacions de peixos, pastures, boscos, llacs i conques d'aigües subterrànies administrades per usuaris, Ostrom conclou que els resultats són, sovint, millors que els predits per les teories econòmiques estàndard, a causa que els usuaris de recursos desenvolupen freqüentment mecanismes sofisticats per a la presa de decisions i l'aplicació de les regles per a manejar els conflictes d'interessos. En la seva obra, ha descrit les regles que promouen resultats reeixits.

Paraules clau: governança econòmica · economia de les organitzacions · economia institucional · economia dels costos de transaccions · recursos comuns

Abstract. Oliver Williamson has argued that markets and hierarchical organizations, such as firms, represent alternative governance structures that differ in their approaches to resolving conflicts of interest. The drawback of markets is that they often entail haggling and disagreement. The drawback of firms is that authority, which mitigates contention, can be abused. Competitive markets work relatively well because buyers and sellers can turn to other trading partners in case of dissent. But when market competition is limited, firms are better suited for conflict resolution than markets. A key prediction of Williamson's theory, which has also been supported empirically, is therefore that agents' propensity to carry out their transactions within their respective companies rises with the degree of specificity of the goods involved in the relationship between the contracting parties. Elinor Ostrom has challenged the conventional wisdom that common property is poorly managed and should be either regulated by central authorities or privatized. Based on numerous studies of user-managed fish stocks, pastures, woods, lakes, and groundwater basins, Ostrom concluded that the outcomes are, more often than not, better than those predicted by standard economic theories, as resource users frequently develop sophisticated mechanisms for decision-making and rule enforcement to handle conflicts of interest. In her work, she has described the rules that promote successful outcomes.

Keywords: economic governance · economics of organizations · institutional economics · transaction cost economics · common-pool resources

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The Swedish Central Bank (*Sveriges Riksbank*) Prize in Economics, established in memory of Alfred Nobel, was jointly awarded in 2009 to Professor Elinor Ostrom (University of Indiana at Bloomington, USA) and Professor Oliver E. Williamson (University of California at Berkeley, USA) (Fig. 1).



Fig. 1. Elinor Ostrom and Oliver E. Williamson. © The Nobel Foundation. Photos: Ulla Montan.

This article is divided into three sections:

- 1) The first section is devoted to a brief history of the prize commonly known as the ‘Nobel Prize in Economics,’ even though it was not originally instituted in Alfred Nobel’s will.
- 2) The second section examines the impact of the financial crisis on economic analyses based on what are called ‘efficient markets.’ The economic and financial crisis that broke out on 9 August 2007 has led to a re-thinking of many of the economic ideas that have strongly influenced society and economic policies since the 1970s.
- 3) The third section spotlights the contributions by Oliver E. Williamson and Elinor Ostrom, the winners of the Nobel Prize in Economics 2009.

The economics prize in memory of Alfred Nobel

Alfred Nobel (1833–1896) was born in Stockholm (Sweden) on 21 October 1833 into a family with a tradition of technical inventions. His father, Immanuel Nobel, was an engineer who had built bridges and buildings in the capital of Sweden. The failure of his businesses drove him to immigrate to Saint Petersburg (Russia), where he made his fortune manufacturing and selling military equipment to the tsar’s army, including the underwater mines that protected the Russian capital from the threat of the British Royal Navy during the Crimean War (1853–1856). The family’s wealth made it possible for Alfred Nobel to study chemistry in Sweden, Germany, France—where he encountered the Italian chemist Antonio Sobrero, the inventor of nitroglycerine—and the United States of America, where he met Swedish inventor John Ericsson.

Alfred Nobel returned to Saint Petersburg after completing his education, but the end of the war led to a decline in weapons orders. He moved to Sweden with his parents and his younger brother, Emil. His older brothers, Robert and Ludvig, remained in Russia, where they built an emporium based on oil

from Baku (Caucasus). In 1864, a nitroglycerine explosion at one of Alfred Nobel’s factories led to the death of his brother, Emil, an event that spurred him to develop a more stable explosive: dynamite. After securing his patent in 1867, Alfred Nobel created 90 laboratories and companies that supplied dynamite for public works projects (tunnels and canals) to more than 20 countries in Europe, America, and Asia.

Nobel never married; he was passionate about chemistry and physics, as well as literature and poetry. For a time he enlisted the domestic help of Bertha Kinsky, later the Austrian Countess Von Suttner, who influenced his pacifistic convictions. By the time of his death, in San Remo, Italy, on 10 December 1896, Nobel had registered 355 patents. His laboratory assistant, Ragnar Sohlman, was charged with executing his last will and testament but its terms were rejected by Nobel’s family: Alfred Nobel had earmarked his wealth to the establishment of a foundation that would award prizes in the fields of physics, chemistry, medicine or physiology, and literature, and for efforts contributing to world peace. Initially, the academies and institutions charged with administering his legacy also questioned the wisdom of the prizes. Finally, in 1901, the first Nobel Prize awards ceremony was held for the prizes in physics, chemistry, medicine or physiology, and literature at the Royal Academy of Music of Stockholm. The Nobel Peace Prize was awarded in Kristiania (currently Oslo, Norway). In 1968, coinciding with the tricentennial of the Swedish Central Bank, the Swedish monetary authority instituted ‘The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel,’ awarded each year by the Royal Academy of Sciences (Sweden) following the principles of the Nobel Foundation (Fig. 2).



Fig. 2. The Medal for the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel. ©© The Nobel Foundation.

Economic crisis and crisis in the economy

In the 18th century, the analysis of human economic behavior fell within the scope of moral philosophy. In the 19th century, neoclassical economics introduced the criteria of maximizing utility and benefit through the rational behavior of agents, which led to concepts such as market equilibrium. The 1929 stock market crash and the ensuing Great Depression cast doubt on the flexibility of the neoclassical approach; instead, there was broad acceptance of Keynesian models of demand, which guided economic policies based on the Phillips curve aimed at achieving sustained growth.

The 1970s, with its so-called stagflation, marginalized all the Keynesian prescriptions. The ‘new classics’ appeared on the scene. Robert Lucas and Thomas Sargent published *After*

Keynesian Economics in 1979. The hypothesis of 'efficient markets' formulated by Eugene Fama took hold, with the claim that market prices reflected the fundamental value of goods. According to the economic analysis that would eventually prevail, agents' behavior was founded on the formulation of rational expectations. The dynamic stochastic general equilibrium models were based on the prevalence of a representative agent and on the concept of 'NAIRU' (non-accelerating inflation rate of unemployment) and Ricardian equivalence. Even the new-generation Keynesians included many of these elements in their models while maintaining the rigidity of salaries and prices. Beyond the debates between the 'new classic' advocate Edward Prescott and the 'neo-Keynesian' approach of Lawrence Summers, a synthesis seemed to emerge in economic thinking.

The election of Margaret Thatcher as the British Prime Minister and of Ronald Reagan as the President of the United States of America opened up a period of mistrust in state and public-policy intervention in society. The fall of the Berlin Wall strengthened this historical trend. Ronald Reagan's appointment of Alan Greenspan as the Chairman of the Federal Reserve deepened the authorities' trust in private agents and markets as able to make decisions rationally by estimating and covering the risks involved. The Chairman of the Fed (Federal Reserve) spearheaded the so-called Greenspan Put, which consisted of letting the markets run themselves, with the guarantee of lowering interest rates and rescuing systemic entities in the event of a sudden crisis. Alan Greenspan's mandate was renewed throughout the administrations of George H. W. Bush, Bill Clinton, and George W. Bush. Moreover, in 1999 President Clinton repealed the Glass-Steagall Act, rendering it possible for large financial groups to assemble, merging the operations of commercial and investment banks. The globalization of the economy provided new levers for growth, such as the global saving glut, emergent low-cost economies (China, etc.), the revolution in information and communication technologies, and a financial system offering innovative products. As a result, the monetary authorities of the central banks limited their attention to controlling the inflation rate, essentially ignoring the evolution in the prices of goods (stock market and real estate prices).

The 1990 Nobel Prize in Economics awarded Harry M. Markowitz, for his portfolio selection model, Merton H. Miller, for his financial theories, and William F. Sharpe, for his Capital Asset Pricing Model (CAPM). Market operators drew profusely from the risk appraisal methods (value at risk or VaR) recommended by these financial models. However, the Nobel Prize in Economics has also supported economists who have signaled caution regarding the limitations of the economic approaches that have gained mainstream acceptance. For example, in 1972 the prize was awarded to Kenneth Arrow for his contributions to moral hazard and adverse selection in the presence of asymmetric information, and in 1978 to Herbert A. Simon for his studies on bounded rationality. In 1988, the Swedish Academy awarded the prize to Maurice Allais, who had formulated the Allais paradox, in 2001, the Nobel Prize honored George Akerlof for his famous analysis known as the market for lemons,

Michael Spence for his studies on signaling, and Joseph Stiglitz for his pioneering research into credit markets.

On 9 August 2007, bank activities that had allowed the distribution of loans securitized in structured financial products began to collapse around the world. The underlying financial models, which had been among the most keenly studied at universities and business school, had failed. The financial and economic crisis necessitated a reconsideration of the prevailing paradigm. The Behavioral Economics School approach posited by the 2002 Nobel Prize winners Daniel Kahneman and Vernon Smith had been vindicated, and Charles Kindleberger's studies on 'Manias, Panics, and Crashes' (1978) was considered anew. As Hyman Minsky had cautioned during the previous decades, economic agents were characterized by irrational behavior, excess trust, and waves of optimism and pessimism that fed speculative bubbles. Keynes's 'animal spirits' were back. The economic and financial crisis has shaken up the dominant economic thinking in historical dimensions, as was reflected in the choice of the 2009 Nobel Prize winners.

Brief biography of Oliver E. Williamson

Oliver E. Williamson (Superior, Wisconsin, 1932) is an Emeritus Professor at the Haas School of Business at the University of California at Berkeley (USA) and the editor of the *Journal of Law, Economics, and Organization*. His university education began at Massachusetts Institute of Technology. Later, he earned an MBA from Stanford University and a PhD in Economics from Carnegie-Mellon University.

Williamson uses an informal methodology based on Herbert Simon's (1978 Nobel Prize) contributions on bounded rationality as explained in his study entitled 'A Behavioral Model of Rational Choice,' published in the *Quarterly Journal of Economics* in 1955 (Fig. 5). Williamson's most important contributions have revolved around the resolution of organizational and contractual conflicts, as well as the implementation of agreements, thus laying the groundwork for what is referred to as institutional economics and the economics of organization.

Ronald Coase's groundwork. Conventional economic analysis posits that contracts are complete, and compliance with them is guaranteed by the legal system. It also reduces a company to a black box, with a productive function that transforms productive factors, or inputs, into goods and services, or outputs. Jacob Viner's contributions to the concepts of economies of scale and scope were developed within this framework. This approach to the company was extended to the 'structure-behavior-results paradigm,' in which the goal of maximizing profit leads companies to raise the production level to the point where marginal revenue equals marginal cost.

Ronald H. Coase (1991 Nobel Prize) thoroughly questioned this state of affairs in his 1937 publication *The Nature of the Firm*. Coase defined the concept of 'transaction cost,' which includes the cost of gathering information, costs involved in negotiating, costs related to guarantees, costs inherent in administration, costs derived from conflict resolution, and costs that

arise in implementing agreements. Coase questioned the business decision to manufacture within the organization as an alternative to purchasing from third parties on the market. This choice must be based on efficiency criteria in order to minimize the transaction costs. The dichotomy of 'manufacture vs. buy' leads to the more transcendental dichotomy of 'firm vs. market,' in which the two are alternative governing structures for resolving the conflict of resource allocation. The organizational consequences of this response are quite divergent and of high impact, since the option of resolving the conflict within the company subjects the allocation of resources to the hierarchical authority of the executive, while resolving it through outsourcing in the market requires negotiated contracts to be signed with suppliers. In short, the alternative solutions are as at odds with each other, as was the visible hand of Alfred D. Chandler compared to the invisible one of Adam Smith.

The limits of the firm. Oliver E. Williamson contributed fundamental research into positive economics, specifically, regarding the organizational limits of the firm and the regulatory implications of vertical integration, in his article 'Vertical Integration of Production: Market Failure Considerations,' published in 1971 in the *American Economic Review*. These ideas were further developed in his 1975 book *Markets and Hierarchies*. Williamson's analysis of the limits of the firm was grounded on Coase's concept of 'transaction cost,' as applied to the example of the coal mine supplying an electricity-generating plant. This example originated in the Paul Joskow article entitled 'Vertical Integration and Long Term Contracts: The Case of Coal-Burning Electric Generating Plants,' published in 1985 in *The Journal of Law, Economics, and Organization*. According to Williamson, the relationship between the coal mine and the electricity-generating plant can be established in several ways:

- An incomplete contract via market exchange
- A complete contract that specifies the details of the supplier-client relationship via market exchange and all foreseeable contingencies
- The integration of both activities, coal mining and electricity generation, into a single company

The efficiency criterion that minimizes the transaction costs in order to determine whether to maintain the relationship via market exchange (incomplete or complete contract) or to perform the job within the company, through vertical integration, depends on factors such as:

- The degree of mutual dependency among the activities (proximity, etc.)
- The complexity of the relationship, particularly regarding uncertainty
- The specificity of the physical and human activities involved in the relationship

Williamson pays particular attention to the possible opportunistic behavior that could arise if the relationship is characterized by a high degree of dependence, the complexity is high,

and the specificity of the physical and human assets is considerable. In this case, the solution to the conflict will encourage the vertical integration of the coal mine and the electricity-generating plant into a single company characterized by resources allocated within a single hierarchical decision-making structure.

William's contributions to positive economics regarding the efficient organizational limits of the firm endorse business concentration through vertical integration, in this case. However, this conclusion was in conflict with the antitrust principles and legislation in the United States, which back in the 1960s restricted the formation of companies with a market power higher than the maximums stipulated by the Lerner Index or the Hirschman-Herfindal Index. Throughout the 1970s and 1980s, antitrust laws in the United States evolved, influenced in part by Williamson's studies. Specifically, the *Merger Guidelines* (1984) signaled a radical shift in antitrust principles, which now allowed vertical integration that brought greater efficiency, even if it meant a concentration of market share in the integrated company. The problem to be considered by the regulations and courts that defended competition, as Williamson had stated, was not the amount of market share attained but the potentially monopolistic behavior of the company resulting from the vertical integration process.

The economic institutions of capitalism. Oliver E. Williamson made a seminal contribution to institutional economic analysis in his book *The Economic Institutions of Capitalism. Firms, Markets, Relational Contracting* (1985). This epic study describes the institutions that make up the economic and social system of capitalism, dividing them into two levels:

- 1) The set of rules (legal, social, political, etc.) that govern human interactions in order to facilitate production and exchange.
- 2) The mechanisms to protect property rights

In later contributions, Williamson further examined this topic while opening up new avenues of inquiry for other researchers in the field of contractual relationships, namely, with respect to informational asymmetry, inefficient negotiations, and the substitutive reputation mechanisms of contracts (Kreps, 1990). Likewise, Williamson (1980) also made major contributions in the field of corporate finances, stating that companies with specific assets can be financed by shareholders who exercise control over management and pursue profits in the form of dividends. However, companies with standardized assets can be financed by issuing corporate bonds, since bondholders are interested in profitability from fixed-income securities and only have rights over the assets if the company becomes involved in a liquidation process.

Brief biography of Elinor Ostrom

Elinor Ostrom (Los Angeles, California, 1933) earned her PhD from the University of California at Los Angeles in 1965 with a

dissertation on salt water that filtered down into the potable groundwater in the Los Angeles (California) metropolitan area. Today, she is Professor of Political Science at the School of Public and Environmental Affairs at the University of Indiana at Bloomington (USA). She also founded and directs the Center for the Study of Institutional Diversity, at Arizona State University in Tempe (USA).

Ostrom has grounded a portion of her research upon an inductive methodology based on analyses of case studies and laboratory experiments with psychologists, an approach that some have questioned. She has also examined the strategic interaction of users of common property, through game theory's prisoner's dilemma, in repeated non-cooperative games designed according to the studies of Robert Aumann (2005 Nobel Prize). Therefore, the 2009 Nobel Prize awarded to Elinor Ostrom rekindled the controversy noted by Axel Leijonhufvud on the barriers to entering the profession of economics.

The 'tragedy of common property'

The concept of 'common property' encompasses, among other things, pastures, forests, lakes, groundwater basins, irrigation water for plants, the sea, fish stocks, and the air. The nature of common property is characterized by two features, namely, free access to its use and consumption, and the fact that property rights are undefined. The consumption of common property lowers its availability for other users, so the benefit is individual while the cost is shared. This means that the users or consumers reach the point where their marginal benefit equals the marginal cost of the last user or consumer. This perverse incentive for users of common property will lead to the overexploitation of these resources, as posited in the pioneering work by H.S. Gordon entitled 'The Economic Theory of a Common Property Resource: The Fishery,' published in the *Journal of Political Economy* in 1954. Later, the biologist Garret Hardin coined the expression 'The Tragedy of the Commons,' as he titled an article that appeared in the journal *Science* in 1968.

Conventional economic analysis offers two solutions to resolve the 'tragedy' of the depletion of common property as a result of the overexploitation of resources. The first is privatization. However, this alternative introduces the problem of defining appropriation rights to the sea or to groundwater. The second solution proposes converting common property into public property based on a nationalization process. On this point, A.C. Pigou noted, in *The Economics of Welfare* (1920) that one option is to establish a general or usage tax to regulate access to and sustainable preservation of common property. Alternatively, a user or capture fee can be instated. Ronald H. Coase questioned Pigou's solution in his important article, 'The Problem of Social Cost,' published in the *Journal of Law and Economics* in 1960. Coase noted that if a tax or access fee to the common property is to be set, it should be freely negotiated by the parties involved. However, this assertion is only appropriate if the transaction costs are zero.

The 'governing' of common property by its beneficiaries

In her book *Governing the Commons. The Evolution of Institutions for Collective Action*, Elinor Ostrom suggests that the use of common property is not necessarily vulnerable to the tragedy of depletion due to overexploitation; rather, users can cooperate through sophisticated processes of sustainably managing common property. The case studies analyzed by Ostrom's research include pastures in Mongolia, China, and Russia. As confirmed by the satellite photographs taken of these pastures, properties collectivized under communist China did not generate the proper incentives for their preservation (Fig. 3); nor did the privatization embarked upon by rural Chinese communes starting in the 1980s improve the situation. This non-sustainability of the pastures was also the case in the public property systems of Siberian pastures in the Soviet Union. By contrast, Ostrom noted that nomadic livestock farmers in Mongolia have managed their pastures following an ancestral process of cooperation that has enabled them to feed their herds for centuries.

Another case analyzed by Ostrom was the use of reservoir water to irrigate farmland in Nepal. Traditionally, the water in the rivers was held back with reservoirs built of stones, mud, and lumber. The frailness of these structures required irrigators to work together to repair and maintain them, for which they were rewarded with access to the water to irrigate their farmlands. International aid and the Nepalese government built reservoirs made of cement and steel, which eliminated the need for maintenance. As a result, irrigators upriver began to collect the water, harming the downriver farmers. Destroying the incentive to cooperate in maintaining the reservoir jeopardized the sustainable use of the irrigation water.

Based on her research, Ostrom formulated the principles for successfully managing common property, stating that they are more readily implemented if the groups of beneficiaries are small and the interactions among members are repeated over time:

- 1) Clear rules by which the beneficiaries of common-pool resources can decide on the different issues that arise regarding access to and use of these resources



Fig. 3. Satellite photograph of pastures (in Mongolia, China, and Russia), a case analyzed in depth by Ostrom, reveal that traditionally managed land areas maintained a better condition and gave greater yields.

- 2) Conflict-resolution mechanisms
- 3) Aligning the responsibility for maintaining the common property with the benefits yielded by the users
- 4) Ensuring that the processes of monitoring, controlling use, and applying sanctions are the responsibility of the users themselves, not those of an independent third party, contrary to the prevailing notion in which monitoring and the authority to sanction were assigned to an impartial external organization. This point seems to contradict the fact that the control cost is incurred privately, while the beneficiaries of monitoring are the group of users. Ostrom explains the proper working of this mechanism based on the role played by reciprocity among the users, the satisfaction of the group to sanction the non-complier, and the fear of the potential non-complier of public disapproval. Likewise, monitoring the use of common goods is easier if there is a calendar for restrictions, such as seasonal bans on hunting or fishing. The alternative of setting restrictions on amounts raises the costs of monitoring and enforcing the corresponding sanctions for non-compliers.
- 5) Gradualness in the sanctions, from the first case of non-compliance to successive recidivism
- 6) Democratic decision-making processes, which require small groups at the start whose size can gradually increase
- 7) Recognition by the public authorities of the system of rules and cooperation established by the users of the common property

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