ORIGINAL PAPER

DOI: 10.26794/2220-6469-2021-15-1-50-59
UDC 330.88(045)
JEL B20

Strict Rules of Free Competition (about The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2020)

Y.P. Voronov
Institute of Economics and Industrial Engineering,
Siberian Branch of Russian Academy of Sciences, Novosibirsk, Russia
https://orcid.org/0000-0002-7835-5827

ABSTRACT

Studying the research results by Nobel prize-winning economists is a fundamentally important task for determining the most promising areas of development of Russian economic science. The author traces the connections between all these works and their predecessors' work, many of whom were also awarded the Nobel prize in economics. Three lines of development of the predecessors' achievements are identified: information asymmetry, limited rationality, the design of market mechanism and new institutionalism. The article does not address the problems of auction theory related to its formal justification, which is part of mathematical economics and game theory. However, it is noted that this is an essential part of the laureates' achievements. The article's main conclusions are that the prize received for "improving the theory of auctions" fits into the broader economic research context. The winners solved the problems of maintaining free competition and reducing the market's likelihood of monopolization. The author pays special attention to the results of the empirical analysis of actually implemented auctions. This analysis is divided into three parts, corresponding to the three stages of each auction: starting problems (distrust, the reputation of participants, etc.), the course of the auction (behaviour of participants and results, in particular, the "winner's curse".

Keywords: Nobel prize on economics; auctions, asymmetry of information; restricted rationality; market mechanism design; game theory; mathematical economics; "predatory pricing"; market monopolization; free competition; the reputation of auction participants; collusion

For citation: **Voronov Y.P. Strict rules of free competition (about the sveriges riksbank prize in economic sciences in memory of Alfred Nobel 2020).** ***Mir novoi ekonomiki = The World of New Economy*****. 2021;15(1):50-59. DOI: 10.26794/2220-6469-2021-15-1-50-59**

INTRODUCTION

Political economy XIX century was a science fundamentally different from modern economic theory. Then it was enough to show or even mention that the market is prone to monopolization. Now the meticulous people are beginning to ask how the competitive market can do this. This is in connection with the following event.

In 2020, two professors from Stanford University (USA) — Paul Milgrom and Robert Wilson — won the Nobel Prize in Economic Research. The Nobel Committee's formulation: "for improving auction theory and developing new auction formats".

The biographies of the new Nobel Prize winners are not abrupt. Paul Milgrom received a bachelor's degree from the University of Michigan, a master's degree in statistics and a doctor's degree in "business" from Stanford.

R. Wilson got all three of these degrees from Harvard University. He had a scientific adviser was Howard Raiff, an eminent decision — making theorist.

Both winners now teach at Stanford University and work in neighbouring departments.

As R. Wilson joked: "Both at work and at home the distance between us is not more than 40 meters".

The fact that the winners are from the United States has become common. Americans are twice as likely to win the Nobel Prize in economics as citizens of the rest of the world.

The theme of the laureates is also not new to the Nobel Committee. In the justifications of the achievements of the previous winners, the term "auction" was not met, but, in fact, the winners of the 1995 (R. Lucas), 1996. (W. Vickrey and J. Mirrlees) and 2007 (L. Hurwicz, E. Maskin and R. Myerson) actively worked with the topic of auctions.

A more specific formulation of the achievements of the winners in 2020, linking them to auctions, may give the impression that their research is a private issue, one of the relatively exotic market procedures applied in a few specific situations. But it's not. The recipients themselves put their work into a much broader context and the development of new market mechanisms.

More recently, the actual introduction of economic research results into business practice has become the practical criterion for the selection of new Nobel laureates as economists. But that does not preclude the fact that the next Nobel laureates in economics are an integral part of a constantly evolving world of economic science. As we know, there is no science without a theory.

THE FIRST LINE — INFORMATION ASYMMETRY

P. Milgrom and R. Wilson won the award primarily because they were practically implementing auction theory. But the wording of the award highlights the laureates' achievements in developing auction theory. Part of the reason for this decision is that auctions are becoming increasingly prominent in the system of market — based mechanisms. But the most important reason is that auctions are linked to several lines of modern economic theory. One of them — the concept of asymmetric information developed by 2001 Nobel Prize winners in economics George Akerlof, Michael Spence and Joseph Stiglitz. Forerunner laureates — also Nobel Laureate in Economics in 2001 year "for analysis of markets with asymmetric information" Michael Spence.[1] He analysed in detail the results of the bidding where the bidders had different information, in particular the results of the auction.

In fact, the two winners' journey to the 2020 award began with a paper by Robert Wilson, written precisely in line with the concept of asymmetric information [1]. He had worked out a specific situation where information was unevenly distributed among bidders at the start of the bidding and that anomaly was rectified as the case progressed. Then R. Wilson tried to go into formalization beyond auctions and other types of market transactions, but also long — term partnerships [2], and the auction trade subsequently became his main focus. Contributing to this return, no doubt, was Paul Milgrom's development of his ideas.

THE SECOND LINE — LIMITED RATIONALITY

This line of research began with Nobel Laureate in Economics Simon Herbert,[2] who noted that a person within an organization objectively has limitations on his or her rational behavior.

Initially economists introduced into the term "rational" a completely different meaning, far from what ordinary people mean by it. Rational behavior considered by economic theory is quite "dull" and consists only in the attempt to use the resources available to a person with the best benefit for himself. At the same time, as noted by Paul Milgrom, it is implicitly accepted that (according to the theory) a rational person has one unlimited resource– his intelligence and his ability to anticipate future events.

[1] **Michael Spence** (born 1943) is a professor at the University of California (Berkeley).

[2] **Simon Herbert Alexander** (1916–2001) — Professor at Carnegie Mellon University, Nobel Laureate in Economics in 1978.

This weakness was pointed out by Herbert Simon, who proposed a concept of bounded reality based on the following assumptions. Market actors have limited ability to clearly define objectives and foresee the consequences of their decisions. The rationality of the market participant is limited because it cannot be the "perfect calculator".

But it is not just a matter of a person's limited ability to foresee the future [3]. The behavior of many market participants is often guided by the principle of satisfaction rather than profit maximization. I think many readers have had to meet people who, having reached a certain level of affluence, stop caring about his further improvement.

One very special forerunner of Paul Milgrom and Robert Wilson, including Nobel laureates, is Reinhard Selten [4], who received prize in 1994.[3] The concept of R. Selten can be seen as a further development of the ideas of the bounded rationality of H. Simon.

THE THIRD LINE– NEW AUCTION FORMATS AS PART OF THE DESIGN OF MARKET MECHANISMS

The 2007 Nobel Laureates were Eric Maskin[4] and Roger Myerson,[5] who have contributed greatly to the theory of auctions as part of a more general problem of developing (design) market mechanisms. By then, Paul Milgrom and Robert Wilson were not only researchers, but also recognized developers of new auction formats.

In economic theory, the problems of the most intricate market mechanisms, far removed from the normal trade transaction, are much discussed. It is noteworthy that the forerunners of P. Milgrom and R. Wilson have moved from treating the market mechanism as a result of the natural course of events to be understood as a planning goal.

Market planning theory has shown why an auction is usually the most efficient way of allocating private (not public) goods to a given pool of buyers. This theory demonstrates, in particular, that the auction mechanism produces the highest expected return on the seller. In the domestic literature, the criterion of the income of the seller (in many cases — the State) is supposed to be the determining criterion. But other criteria are used in the work of the winners, in particular maximum efficiency of the sold right (license).

In the future, the use of artificial intelligence is considered when developing new auction formats [5].

THE FOURTH LINE– NEW INSTITUTIONALISTS

Most researchers consider P. Milgrom and R. Wilson as continuing a relatively new direction in economic science — neo — institutionalism. Nobel Laureates in economics Ronald Coase[6] and Douglass North[7] are considered to have created this line.

The term "neo — institutionalism" introduced Oliver Williamson.[8] It is submitted that that he has finalized this direction of economic thought into a whole teaching. The main work in this area — is Douglass North's monograph "Institutions, Institutional Change and Economic Performance" [6]. But the beginning of the neo — institutional direction of economic thought

[3] **R. Selten** (1930–2016) — the only German economist to win a Nobel Prize in economics. His achievements were overshadowed by John Nash, with whom he received the award.

[4] **Eric Maskin** (born 1950 r) — Professor at Princeton University, Nobel Laureate in Economics in 2007.

[5] **Myerson Roger** (born 1951) — Professor at the University of Chicago, Nobel Laureate in Economics in 2007.

[6] **Ronald Harry Coase** (1910–2013) — an English economist, a professor at the University of Chicago, a Nobel Laureate in Economics in 1991 "for the discovery and clarification of the precise meaning of transaction costs and property rights in the institutional structure and functioning of the economy".

[7] **Douglass Cecil North** (1920–2015) — American Economist, Professor at the University of Washington, Nobel Laureate in Economics in 1993. Won it with Robert Vogel "For the revival of research in the field of economic history, thanks to the application to them of economic theory and quantitative methods allowing to explain economic and institutional changes".

[8] **Oliver Eaton Williamson** (1932–2020) — Professor at the University of California, Nobel Laureate in Economics in 2009.

was the work of R. Coase "The Nature of the Firm" [7]. In it was the search for an answer to the unexpected question: "Why exist firms?". R. Coase replied so: "Because inside of them is below transaction costs". The question to which R. Coase responded was, over time, overshadowed by the focus on the theory of transaction costs, of which R. Coase is rightfully considered the author.

However, the more important element of the neo– institutional concept, which develops one of Hegel's theses, is ignored: "All existing market institutions are appropriate, and it is necessary to explain the reasons for their existence".

While arguing for the need to analyze and explain what exists, neo — institutionalism is relatively new (and the century has not gone by) the direction of economic thought is based on several postulates. First — economic agents are able to decide their actions individually. Second — market institutions are influenced by the behaviour and interests of specific market actors who seek to avoid chaos. The information used by economic agents is always asymmetrical. One side of the transaction is bigger, the other side — is smaller. This characteristic of economic information provides the basis for unscrupulous (opportunistic) behaviour, which, according to the concept of neo — institutionalism, should be equally taken into account by theory as by rational behaviour.

Much of the attention of neo — institutionalists has been devoted to the analysis of changes in the structure of economic agents: households, private companies and States, which were perceived as a given by neo — classicists and not studied separately.

While recognizing the limitations that neoclassical theory has taken into account (i.e., physical, resulting from scarcity of resources, and technological, reflecting the level of development of knowledge and skills of economic agents), neo — institutionalists have introduced another type of constraint related to the institutional structure of society. They argue that, with the adoption of a new type of restriction, it will be possible to better understand and explain the real world in which economic agents operate in a situation of uncertainty and risk, high transaction costs, unclear property rights, unreliable contracts.

Motivation in neo — institutionalism is more diverse than in other currents of economic thought. In classics and neo — classics, the main, and often the only, motive for behavior– is the maximization of benefits, and in neo — institutionalism, the mechanism (progress) of decision — making, its conditions and prerequisites are analysed. Motive becomes just one of the prerequisites that are volatile.

Traditional neoclassical theory, according to O. Williamson [8], characterized by the technological paradigm. Neo — institutionalism relies more on the notion of the economy as a system of mutually beneficial relationships between people and companies. Such relations could not be realized otherwise than through an institutional environment.

Representatives of neo– institutionalism are accused more than others of "economic imperialism", i.e. of seeing economic phenomena and processes in all aspects of social life. You can argue with such critics. If economists see friendliness as an opportunity to get interest — free credit, it does not prevent psychologists from exploring friendships by other methods and other conceptual devices.

I consider, that this "flaw" is obligatory for economist. Let psychologists and sociologists reclaim territory taken by us.

WHAT IS AUCTION THEORY?

Before answering this question, I will give you some relevant facts. In their papers, Paul Milgrom and Robert Wilson, in the part noted as the basis for their Nobel Prize in Economics, developed the research of William Vickrey, who became a Nobel Laureate in 1996 — year.[9] They were his

[9] **William Vickrey** (1914–1996) — American Economist, Professor at the Columbia University, Nobel Laureate in Economics in 1996.

followers so that when W. Vickrey died (a few days after he received the Nobel Prize), Paul Milgrom gave the Nobel lecture for him.

William Vickrey's initial premise was that auctions — are part of a system of market mechanisms that keep economies from monopolization and speculative bubbles.

You can give a lot of examples of modern auctions, one more surprising than the other, each of which — has a lot of procedural subtleties.

Auction theory is largely formal and expressed by many mathematical equations [9]. The formalised part of auction theory is significant, and is organically part of the mathematical economics that works with models of some conditional economies. But the most interesting thing is that it involves data processing and analysis of actual auctions [10].

In addition to a series of formal justifications, auction theory includes a system for analysing the effectiveness of different types of auctions. It considers three stages of the auction: the starting positions of the bidders, their behaviour during the auction and their evaluation of the results at the end of the auction [11].

START PROBLEM — MISTRUST

In any trade transaction, the buyer doubts to some extent the characteristics of the good or service it purchases. Thanks to the formalization of the tendering procedure in the auction trade, the level of these doubts can be assessed in the course and outcome of the auction. One element of auction theory — is the assessment of the buyer's initial distrust.

Many empirical studies have been carried out by the 2020 award winners to demonstrate that in designing the format of the auction, it is imperative to avoid as much as possible the suspicion of buyers that some information is deliberately hidden from them [12]. Suspicions increase participants' caution and deter them from high demand prices. The level of initial mistrust can be identified by special studies and surveys.

The root of the distrust among participants, not only in the auction but also in any market transaction, is that any information may contain elements of persuasion. Therefore, the concept of asymmetric information clearly needs to be complemented by a provision that any market information may be toxic, i.e., capable of forcing a market participant to make the wrong decision.

Like many economists, Paul Milgrom proceeds from the general proposition that if something exists and seems to us to have no direct relationship with the market, it's– a research gap and needs to be found that connection [13].

In the framework of research on the motives of decision– making (both at auctions and in the market economy in general), the winners have focused on the motivation of maintaining the company's reputation as a worthy market participation.[10] By setting a price or defining the parameters of price policy, a firm that cares about its reputation is oriented not so much on current profits as on the future behaviour of partners and competitors.

However, the development of such a theory is useful for practical applications even if it is not practicable. In Russia, the reputation of market participants can be considered catastrophic. But reputation is a major part of so– called intangible assets that have a monetary value.

In the 1990s, the share of intangible assets of Russian companies was 5%. In 30 years it rose to 12%. But this is far from the world average (63%).[11] World practice of reputation evaluation has spread in the Russian Federation. Any manager or owner of a firm may apply to the system[12] and obtain a value for the reputation of his organization. But there's no particular demand.

Paul Milgrom and Robert Wilson associated a reputational evaluation problem with the format of the auction. It's one thing to have companies

[10] The founders of reputation theory and its role in the market are Nobel Laureates in Economics in 2004, Finn Kydland and Edward Prescott.

[11] URL: http://emco-eqs.webflow.io/

[12] URL: https://www.rep-in.ru/

with impeccable reputations participate in an auction, and it's another to do so if some of them cause mistrust of other participants in the auction itself and its possible outcome.

PROBLEMS DURING THE AUCTION — POSSIBLE COLLUSION

The second element of auction theory is based on an analysis of the behaviour of bidders during the auction. If in one case buyers define their proposals as a simple additional fixed sum, and in another case, they have interest rates in mind, the auction rules for both should be different. The rules of the auction restrict the actions of bidders, making it easier to formalize their behaviour. Formalizing participants of the auction participants is a powerful means of limiting the opportunities of large players, equalizing their rights with those of other auction participants. Using simple auction formats does not always achieve this goal.

I'll start with negative examples, namely — the 1995 auctions of collateral, which deprived our State of a substantial part of its property. The subject is, unfortunately, overly politicized. It seems that this is a case of privatization in general, and this is not. Bail auctions began after the Decree of the President of the Russian Federation B.N. Yeltsin in August 1995.[13] There were only 12 before the end of the year and only a few large State — owned companies were affected. The increase in the sales price relative to the starting price was minimal: the majority share of "Sidanko" was sold with an increase of 4%, "Yukos" — 2.6%, "Norilsk Nickel" — 0.6%.[14]

The main evidence of collusion is that the small increments are such that there is no competition during the auction. No competition– hence, the market is totally or partially monopolized. Collusion– is a way of mutually supporting those who replace free competition with monopoly or oligopoly.

So it makes sense that the development of auction formats that reduce the likelihood of collusion among bidders requires an interested party and an order for such development. But due to the absence of a normal scientific analysis in Russia so far, even the 1995 bail auctions, one can guess that the state order for the development of auction formats with a low probability of collusion in our country is not yet ripe.

Collusion and mistrust — two issues that increase the likelihood of monopolization. Therefore, measures aimed at reducing this probability create obstacles to the activities of future and established monopolists and contribute to the maintenance of free competition.

SUMMING UP, "WINNER'S CURSE"

Third element of auction theory (in its empirical part) — summing up of auction results. Losers are notoriously unhappy with the auction, but it turns out that often the winner of the auction is dissatisfied. Such situation was designated by the winners as the "curse of the winner" and analyzed in detail. It can be understood by interviewing many auction winners who often worry that they overpaid.

There are many such complaints in some auction formats, for others — substantially less. Victory can be considered both bad news and good news. The better the auction format the less regret the winner. This pattern was first noted by Robert Wilson [14]. The winner's estimate of his future income was the most optimistic. When he wins, he gets a lot of negative information when he learns that everyone else has given less credit than he has. On the basis of this information, he adjusts his earlier estimate of his future gain and becomes pessimistic.

Paul Milgrom "Winner's curse" does not treat simply as a phenomenon, a symptom of the efficiency (or ineffectiveness) of the chosen auction format. He explains it using

[13] Decree of the President of the Russian Federation dated 31.08.1995 No. 889 "On the procedure of deposit of shares in federal property".

[14] Calculated from data: URL: http://nationalization.ru/privatizaciya-v-90/kriminal-zalogovyh-aukcionov/.

two categories — persuasion and openness of information [15]. It is interesting that this approach of the laureate overlaps in many ways with the ideas expressed exactly a century ago by the Russian academician V. M. Bekhterev [16]. The latter drew a line between suggestion and conviction, believing that the belief was to explain to a person what the actual situation was and to counter the compulsion, which was an instrument for influencing not only the mind but also the subconscious.

Paul Milgrom draws a similar line between persuasion and openness of information based on another criterion. Persuasion — there is a purposeful influence on the consciousness of market participants, in the openness of information there is no such purpose, at least obviously. "Winner's curse" is the result of persuasion (and possibly compulsion), even if the seller did not intend to induce or convince the buyer of the merits of the goods, services or rights he purchases.

BROADCAST TRADE

The modern market economy is characterised by the fact that the bulk of intra — market transactions consist of trading rights for certain activities. Those who try to link the modern economy to commodity flows condemn themselves to failure. They are replaced by intangible assets. One such asset — is the right to use radio airplay.

Bidders at auctions to sell licenses to use a given radio frequency spectrum in a given territory are divided into several groups. Radio station owners, cellular service providers are interested in licences. Many nations around the world are using the work of P. Milgrom and R. Wilson to auction licenses for radio frequency bands.

In the United States, radio frequency auctions have been held since 1994. The first was the debut of P. Milgrom and R. Wilson as developers of auction procedures. Since then, 87 auctions have been held, i.e. 10 every three years. About 60 billion dollars was earned at these auctions. The last large — scale auction took place in 2008 for 700 MHz. The first 3G-frequency auction was held in India in 2010, with a revenue of 14 billion dollars. In 2015, it held an auction for frequencies ranging from 0.8 to 2.1 GHz, lasting 19 days. Government revenue — 17 billion dollars. That is, everywhere such auctions generate revenue for the state.

In Russia such auctions are not popular — neither in the radio frequency market, nor for cellular communications. Thus, in 2015, a seven — day auction was held to sell licences for the right to use radio frequencies for the fourth generation (4G) communication networks. For the next bids — in 2016 and 2018 — no bids were submitted (https://digital.gov.ru/ ru/events/38690/). In 2020, strips of millimeter range for creation of pilot zones of networks 5G were provided without any competition to the joint enterprise Megafon and Rostelecom created especially for their reception.

Thus, auctions on the sale of radio frequencies for cellular communications of new generations in Russia have ended and the collusion has gone unnoticed. People don't really care who gets the radio frequencies. But the exit of competition from this field was supposed to be a very important event for domestic economic science. Unfortunately, this has not happened.

PREDATORS ON THE MARKET

If prices go down in the market, it's good for buyers. In the case of consumer goods, statisticians report that inflation is low. But in fact, a big "predator" company came to this market, and it knocked down prices to drive out competitors who couldn't handle sales at such low prices. Sometimes retail prices are lower than not only wholesale prices, but also production costs. A large company can compensate for its losses by selling other goods or trading in other markets, and weaker competitors will realize that they will not keep up and leave. A large monopolist can then

quietly raise prices without having to worry that its interests will be affected.

The term "predatory pricing" is usually translated into Russian as "predatory pricing". This translation hides two tricks. First, "pricing" — is not so much "price formation" (in the sense of shaping prices on the market) as "assigning price to an individual seller". With the word "predatory" is even more complicated: with full decryption we are talking about "predator", which guards its territory or has hidden and waits for the victim. Personally, I consider the translation of this term as "treacherous", behind which there are goals other than trade. But the term is already well established as "predatory", so it will have to be used even after these clarifications. Such price fixing increases the probability of monopolization of the market or maintenance of monopoly of one market participant — "predator". In most countries, it is considered a violation of competition law and is subject to legal prosecution.

Special case of "predatory" price — so called "deterred price". The price is set by the "predator", who has already eliminated the competitors and protects the seized market. It is appointed in such a way that a novice (perhaps even larger "predator") is not interested in entering this market.

These studies have a powerful potential client — the antimonopoly service. However, the vast majority of countries in the world do not have a direct link between science and the work of this service. Recognition of a company as a "predator" requires a legal form that is outside the scope of scientific theories and their empirical confirmation. Lawyers can deny the very link between price war and unfair competition. Moreover, in practice, it is not pure monopoly, but oligopoly, where several "predators" either seize the market or block the entry of new players into it [17].

The problem arises — how to separate "predation" from competitive pricing? For that you have to know, it's necessary to know whether the firm has the assets that are necessary to "sit — down" the competitor and whether it agrees to take long — term losses.

Another way of separating "predation" from normal competition is connected with the proposed laureates' division of "predatory pricing" into three classes, which correspond to three types of models.

The first corresponds to the reputation model [18]. When an already working market participant, meeting with a stream of willing to come to this market, opens a price war, it acquires a reputation of "big — time", which prevents the arrival of new competitors.

Signalling models correspond to the second class. The newcomer does not know whether the incumbent is weak or not, i.e. high or non — existent costs. And when he makes the decision to enter the market, he analyzes its price. Here P. Milgrom identified two possible equilibrium states: separate and joint. In the first, the participant maintains low price and damages. In the second, both parties bear damages.

The signal model may, for example:

1. The incumbent selects the price.

2. Low earnings for a beginner if the costs are low.

3. Market grab game.

In such a model, the low price suggests that a market participant has low costs. Relying on low profits, the newcomer begins to sell at a lower price.

The third class corresponds to the model "large pocket "predator" [19]. In the model of "predation", "large pocket" there are two companies, a novice and a participant. They incur the same costs during the standoff and differ only in the amount of liquid assets. Whoever has the most assets wins.

There are many disadvantages to such models: extensive information is required, price wars are absent in equilibrium markets, it is doubtful that a newcomer is unable to attract more assets. But most importantly — they can

only be used to explain what is happening, and to my mind, they are useless as a working tool. Creative techniques of entrepreneurs sometimes contain so much fiction that no theory can capture them.

Researchers (and winners among them) argue that the existing theory is a reliable basis for decision — making in the field of antimonopoly legislation, that theoretical constructions can separate "predation" from honest price competition [17].

In the scheme of the "predator" that captures the market, prices are lowered to then establish a monopoly. And this intent can only be determined by subsequent events when prices rise after elimination of competitors. But even then, a new player can come to the market, who will reduce prices for the same purpose.

In addition, post — takeover price increases cannot be long — lasting, otherwise they will attract new players who may be more financially strong [20].

Characteristically, models of "predatory pricing" are not particularly complex. They are built to give an overall qualitative assessment of the mere fact of "predation". Simplification conscious and explained. If you bring models closer to reality, you have to enter an excessively large number of parameters that represent that reality.

Such models are interesting also because behind the private problem of "predatory" pricing is the already mentioned large — scale problem of economic theory, namely — the tendency of the market economy to monopolize certain markets and, in this sense, to deny the possibility of the long — term existence of free competition. "Predators" will take a monopoly position in all markets, and the time of free competition will end.

The Nobel laureate's forerunner, R. Selten, divides three types of strategies for human behavior in the marketplace, and not only:

1. *Routine,* when he does what he normally does.
2. *Imagination,* when a man comes up with something original that he has never seen before.
3. *Reasoning,* when it comes to a decision on the basis of the logical constructs it has constructed.

Game theory, as well as classical and neo — classical approaches, are based on the latter approach. And in life, all three strategies are used as needed. Is it possible that theory can anticipate all creative findings of market participants? It's unlikely.

CONCLUSIONS

So, while Paul Milgrom and Robert Wilson have won the Nobel Prize in Economics for the development of auction theory, their research spans a much wider area [21].

The economists who applied for the Nobel Prize in 2020 are not so much interested in themselves as in the subjects of their research, but the Nobel Committee considered them less important than auction theory. For example, Stephen Berry and James Levinsohn (Yale University) and Ariel Pakes (Harvard University) have developed a widely used BLP (by the first letter of their names) logistics model for assessing demand. David Dickey (University of North Carolina) and Wayne Fuller (University of Iowa) developed the Dickey– Fuller test, which evaluates time series for the likelihood of growth. Ironically that in 2003 won the award Robert Fry Engle and Clive Granger, who conducted their research using this test. Now Paul Milgrom and Robert Wilson have won the award, which also include time series testing for stationarity.

Clearly, in a year when the world economy was undergoing unprecedented changes, the Nobel Committee had assumed that there would be little benefit from trend studies.

Harvard University Professor Claudia Goldin was projected as laureates also. She is deals with gender — based economic inequality, but the relevance of the topic has faded in the background of developments in 2020.

REFERENCES

1. Wilson R. Competitive bidding with asymmetric information. *Management Science*. 1967;13(11):816–820. DOI: 10.1287/mnsc.13.11.816
2. Wilson R. The theory of syndicates. *Econometrica.* 1968;36(1):119–132. DOI: 0012–9682(196801)36:1<119: TTOS>2.0.CO;2– J
3. Simon H.A. Rationality as process and as product of thought. *The American Economic Review*. 1978;68(2):1–16.
4. Simon H.A. A behavioral model of rational choice. *Quarterly Journal of Economics*. 1955;69(1):99–118. DOI: 10.2307/1884852
5. Milgrom P.R, Tadelis S. How artificial intelligence and machine learning can impact market design. NBER Working Paper. 2018;(24282). URL: https://www.nber.org/system/files/working_papers/w24282/w24282.pdf
6. North D.C. Institutions, institutional change and economic performance. Cambridge, New York: Cambridge University Press; 1990. 152 p.
7. Coase R.*H*. The nature of the firm. *Economica.* 1937;4(16):386–405. DOI: 10.1111/j.1468–0335.1937.tb00002.x
8. Williamson O.E. The economic institutions of capitalism: Firms markets, relational contracting. New York: The Free Press; 1985. 450 p.
9. Milgrom P.R., Weber R.J. A theory of auctions and competitive bidding. *Econometrica.* 1982;50(5):1089–1122. DOI: 10.2307/1911865
10. Milgrom P.R. Putting auction theory to work. Cambridge, New York: Cambridge University Press; 2004. 396 p.
11. Ausubel L.M., Milgrom P. Ascending auctions with package bidding. *Frontiers of Theoretical Economics.* 2002;1(1):1–44. DOI: 10.2202/1534–5955.1019
12. Milgrom P.R. Auction market design: Recent innovations. *Annual Review of Economics.* 2019;11:383–405. DOI: 10.1146/annurev– economics– 080218–025818
13. Milgrom P. Is sympathy an economic value? Philosophy, economics, and the contingent valuation method. *Contributions to Economic Analysis.* 1993:220:417–441. DOI: 10.1016/B 978–0– 444–81469–2.50017–1
14. Wilson R. Auctions of shares. *The Quarterly Journal of Economics*. 1979;93(4):675–689. DOI: 10.2307/1884475
15. Milgrom P. What the seller won't tell you: Persuasion and disclosure in markets. *Journal of Economic Perspectives*. 2008;22(2):115–131. DOI: 10.1257/jep.22.2.115
16. Bekhterev V.M. Suggestion and its role in public life. St. Petersburg: K.L. Rikker Publ.; 1908. 175 p. (In Russ).
17. Brodley J.F., Bolton P., Riordan M.H. Predatory pricing: Response to critique and further elaboration. *Georgetown Law Journal.* 2001;89(8):2496–2528. URL: http://www.columbia.edu/~mhr21/papers/bbr– response.pdf
18. Milgrom P., Roberts J. Predation, reputation and entry deterrence. *Journal of Economic Theory*. 1982;27(2):280–312. DOI: 10.1016/0022–0531(82)90031– X
19. Benoit J.— P. Financially constrained entry in a game with incomplete information. *The RAND Journal of Economics.* 1984;15(4):490–499. DOI: 10.2307/2555520
20. Kenton W. Predatory pricing. Investopedia. 2020. URL: https://www.investopedia.com/terms/p/predatory– pricing.asp
21. Holmström B., Milgrom P. Regulating trade among agents. *Journal of Institutional and Theoretical Economics*. 1990;146(1):85–105.

ABOUT THE AUTHOR

Yuri P. Voronov — Cand. Sci. (Econ.), Leading Researcher, Laboratory for Modeling and Analysis of Economic Processes, Institute of Economics and Organization of Industrial Production SB RAS, Novosibirsk, Russia
corpus-cons@ngs.ru

The article was received on 10.11.2020; revised on 30.11.2020 and accepted for publication on 15.12.2020. The author read and approved the final version of the manuscript.