

## **J. Stiglitz's Contribution to the Grounding of Market Theory with Asymmetrical Information**

M. Şimandan

**Matei Şimandan**

Faculty of Economics, "Aurel Vlaicu" University of Arad, Romania

### **Abstract**

This paper approaches a theme of actuality for the theory and practice of research from different fields of economical and social activities. In the first part, we present the phenomena associated to the asymmetrical distribution of information, with a focus on the contributions of G. Stigler, J. Mirrlees and W. Vickrey, as well as those of G. Akerlof and M. Spence. The second part of the paper insists on the theoretical evaluations involved by the functioning mechanisms of the market in the context of imperfect information, as they were theoretized by J. Stiglitz. The latter part of the paper highlights the possibilities of alternative information as opposed to the classical model of macro-economy and micro-economy, as well as the means of counteracting imperfect information form among the actors that operate on different segments of market economy.

**Keywords:** imperfect information, doubt, risk, decision making behavior.

### **Theoretical bench-marks of an explanatory model**

The importance of market theory with imperfect information was admitted by the international scientific community as early as 1982, when George Stigler, received the Nobel Prize for research in the field of information economy. Then, James Mirrlees and William Vickrey were laureate of the Nobel Prize in Economy in 1999 for their contribution in the study of the behavior of market actors in the conditions of asymmetrical information. Last but not least, in 2001, George Akerlof, Joseph Stiglitz and Michael Spence received the Nobel

Prize for the research of information imperfection at the level of micro-economy and macro-economy.

Underlying the thesis that information is a limited resource involving certain costs, the contributions of G. Stigler (1961) could be structured around the following ideas: the cost of informing economical agents about the prices offered by the other participants on the given market, the cost of searching time and its reference to the income of the given individual's income, the factors that determine the cost of searching activities (the spreading degree of the prices, the modification of the balance demand-offer in time, the value of the transactions etc), the cost of searching for information referring to the work force market, the amount of direct and indirect expenses for obtaining the information.

The studies conducted by J. Mirtlees and W. Vickrey (1999) highlighted the fact that the asymmetrical distribution of information in the case of market participants leads to modifications at the level of economic behavior in the way that the better informed individuals tend to strategically exploit this advantage. Hence, they focused their analysis, on the one hand, on the way in which the contracts and the functioning system of institutions can be conceived so as to face the problems connected to information asymmetry. On the other hand, their preoccupation focused on the consequences determined by information imperfection on the financial market, on the credit and social insurance system, as well as on the mechanisms of elaborating economical policies.

The novelty brought by G. Akerlof, J. Stiglitz and M. Spence (2001) consists in the fact that the thesis of information imperfection is analyzed at the micro and macro-economical level. While Akerlof insists upon the difficulties encountered by the macro-economical theory in explaining the persistence of involuntary unemployment, the effects of monetary economy on production and unemployment, the gap between the level of economy and that of retirement funds, Spence realizes that the prices have the capacity to provide relevant information according to the choices made by economic agents, and the better informed individuals can transmit credible signals to the less informed ones to avoid phenomena associated to adverse selection.

Before going further, I have to mention 3 of the phenomena typical to the market with asymmetrical information, which were theorized along 4 decades of research conducted by the above mentioned authors. I am referring to the cost of research (which

highlights the cost of research activities, its implications upon dealing costs and the creation of an efficiency calculus of this activity on different segments of the market), adverse selection (a phenomenon reflected in the transactional process and that of choosing goods or services in the context of asymmetric information between the seller and the buyer) and the moral risk (a phenomenon which describes an individual's behavior after the finalization of a transaction and the impossibility of noticing the actions led by one of the two partners of the change).

### **The asymmetrical distribution of information and its consequences**

One of the most profound analyses referring to the asymmetrical distribution of information and its consequences on the different segments of the market can be found in Joseph Stiglitz's study *Information and the Change in the Paradigm in Economics*, published in 2002.

Stiglitz approaches a series of arguments in the favor of market theory with asymmetrical information, seen as an alternative to the model of traditional economy. Consequently, he states that the new current of the markets with asymmetrical information tries to identify the wrong premises which made the classical economical theory not to provide coherent explanations for certain economical processes and phenomena.

His comments first refer to the conception that economical phenomena could have a continuous variation and could be described with the help of a continuous function. The introduction of the hypothesis of asymmetrical information in the calculus determines a discontinuous variation of economical phenomena which are to happen, the probability of their production being characterized by a function of discrete repartition and not by a continuous one.

Secondly, the classical theory leaves the impression that each economical agent can solve the problem of maximization only by considering the existing variables. Reality proves that the information isn't equally distributed among the economical agents and that there can be situations when certain economical phenomena can't be mathematically modeled, thus leading to the impossibility of solving the problem of maximization.

Thirdly, Stiglitz thinks that the thesis according to which there can't be but a single point of equilibrium between offer and demand is

far from reality, because „even a small doses of information imperfection can have a profound impact upon the nature of equilibrium” (2002, p. 484). The impossibility of reaching an equilibrium point of the price between the offer and demand on a market with asymmetrical information was proved by the author by developing certain theoretical models, as well as by empirical observations regarding the existence of unemployment, credit rationalization and other situations which highlight failures of the market.

Added up, the problems discussed above reveal a few very important aspects:

- The fact that information asymmetry is a phenomenon which is encountered in most of the fields of economical activities;
- The fact that information must be taken into account in every moment of the economical analysis;
- The fact that it is the most heterogeneous economical good, different from every other type of merchandise;
- The fact that the information has the characteristics of a public good, that is there aren't sufficient means of prohibiting the access to information of those who don't contribute to obtaining it;
- The fact that information can't be sold but once, after which it loses its informational feature and implicitly its economical value;
- In the transactions on market information the buyer doesn't have the possibility to know beforehand the quality and actuality of the product he is buying.

Based on these characteristics, Joseph Stiglitz (2002) develops an interesting commentary regarding the theoretical and practical consequences of asymmetrical information. From the numerous aspects analyzed by the author, I will mention those which are closest to the object of this paper, namely:

- The imperfection of information is a phenomenon spread in the whole economy, so that different people know different things: “workers know more about their abilities than the firm; the person who purchases an insurance knows more about his health than the insurance company; the owner of a car knows more about the car than the potential buyers; the owner of a firm knows more about his firm than a potential investor; the person who takes a loan knows more about his risk than the bank who gives him the loan” (2002, p. 488).

- In the case of markets with asymmetrical information, each economical agent is determined to risk in order to obtain the stock of information he needs in his transactions, but also to hide certain information he possesses from the other participants on the market. Meanwhile there are economical agents who are willing to give information, but in this case there is a problem of recuperating the costs involved by this activity.

- Through certain mechanisms, the market tends to reduce information asymmetry through the role played by the price system and the different activities of individuals or economic agents. The main mechanism through which an individual, for instance, can obtain information consists in the observation of the other individuals' behavior. A special relevance is thus owned by the insurance market, where the insured and the insurer try to obtain extra information, both being aware that through their behavior they do nothing but transmit certain information.

- The fact that through their actions and activities individual's pass over certain information determines then to change their behavior. These changes in their behavior aim to hide certain information about the true state of things, as it is similarly possible for the individual to induce false information which can distort the observation mechanism.

In the same analysis, Stiglitz refers to the means through which the theory of markets with asymmetrical information improved the program designed by J. M. Keynes and his followers. The starting idea regards the lack of a micro-economical grounding of macro-economical theories. This situation wasn't overcome by Paul Samuelson's attempts to combine traditional micro-economy theorized by Keynes in the so called neoclassical synthesis. The task of providing Keynes's theory with a micro-economical grounding fell upon the representatives of the theory about information imperfection, considered "true continuators of Keynesism".

One argument regards the improvements brought to the standard model of macro economical explanation. From this perspective, Stiglitz and the other supporters of the theory of markets with asymmetrical information consider that micro economy should be adapted so that it can sustain the results obtained by the macro economical theory, and macro economy, in its turn, should constitute a theoretical support for the level of the micro economical explanation. In the order of these preoccupations, the following aspects are envisaged:

- As opposed to Keynes's approach, where the demand for credit and the offer of saving money is left to the free action of the market, the new theory of markets with imperfect information tries to prove that credit market can't ensure an optimum level of the distribution of credit according to the interest, the essential element that appears in this mechanism being the one of rationalization of the credit.

- As a consequence of asymmetrical information between the creditor and the debtor, banks tend to maintain the actual rate of interest and not to satisfy all the lending demands. Not having the possibility to know the debtor's capacity to return the loan, the credit market is faced with „honest” debtors, who accept only those credits which they can return in the conditions of the contract, but also with „dishonest” debtors, who, in the moment of the loan, are aware of their incapacity to return the loan, hoping to eventually find recourses to pay their debts.

- The fact that the debtors who accept to pay a higher interest rate may be a symptom of the risks connected to paying back a loan. Consequently, even if the interest rate increases, the bank's risk of getting back its loan increases as well. This is the reason why the crediting institution sets an interest rate at a level which can insure the maximization of the profit and the minimization of the risk, the interest rate thus becoming mechanisms for client selection.

- If in the traditional macro economical theory shares and obligations were considered perfectly replaceable instruments on the long run, the theory of markets with imperfect information shows that the emission of shares constituted a signal for firms that are weak from the economical point of view. They prefer to issue shares on the market (where there are no obligations to return the sum obtained from selling them), instead of obligations (which involve the issuer's obligation to return the borrowed sum through the issue of value titles).

- When firms choose to issue shares, they practically share the risks with the shareholder. Their aversion for risk obliges firms to signal on the market their capacity to protect themselves from risks and to give signals regarding the profitability of the investment for the owners of the value titles.

- The asymmetrical distribution of information at the level of the participants to the transactions connected to the risk situation also manifests itself on the insurance market. The limit the phenomenon of adverse selection and that of moral risks, the insurance companies can limit the number of insurance policies sold, in order to obtain

information regarding the risk situation of the client. Consequently, the insurance companies are preoccupied to notice the distinctions between the different types of risks and the way in which they find themselves in the individuals' preferences for certain insurance contracts. By determining the clients to "reveal" information about their own risks, the insurance company gives them the possibility to choose a certain scheme of alternative contracts, where small indemnifications can be compensated through higher deductibility.

- While the representatives of the "new macro economy" doubt the state's capacity to influence the monetary bulk, since it can only control the exogenous money offer, not the monetary substitutes (shares, obligations and other derived value titles), the theory of the market with asymmetrical information anticipates that risk aversion and the uncertainty owed to the lack of information cause the firms not to resort to the capital market in order to obtain the funding they need. The explanation is that the owners of value titles are more interested in the price of selling these value titles, not their actual value.

The second argument refers to the controversial problem of the state's intervention in economy. Hence, the theoreticians of markets with imperfect information asked themselves whether governmental intervention would be a better way of correcting market failure. They tend to consider this solution more efficient than the ones envisaged by the laissez faire type of economy, especially thanks to the aspects connected to imperfect information. That is to say, the efficient allocation of resources can't be decentralized without the state's intervention and the system of taxes, contributions and subventions.

To support this option, two considerations of principle are invoked: governmental authority possesses a set of monitoring instruments that firms don't possess, the government thus being able to intervene and prevent or counteract the phenomena typical to asymmetrical information, as in the case of adverse selection and moral risks; government interaction can correct the distortion created through taxes and subventions owing to imperfect information by imposing other taxes or by diversifying the forms of giving subventions.

More specifically, Stiglitz (2002) refers to a series of research that led to the conclusion that an economy characterized by imperfect information can't be efficient from the paretian point of view even if the costs of obtaining information are taken into account. The conclusions of these studies offer the author the arguments to declare the failure of

the laissez faire type of economical theories. Among the reasons discussed, the following are mentioned: free market doesn't offer the individuals stimuli to discover and pass over information; the individuals have the tendency to create information asymmetry and to deteriorate the given market; even in the conditions where there is information, problems referring to their use will arise; the phenomena typical to asymmetrical information – adverse selection and moral risk – have the capacity to produce sufficiently important externalities so as to determine the permanent failure of the given market (cf. Stiglitz, 2002, p. 503-504).

### **Conclusions**

Just like Akerlof and Spence, Stiglitz noticed that in economy there are numerous segments of the market where information is asymmetrically distributed, and the means in which it is dispersed from one economical segment to another influences the behavior of individuals on the given market. From the perspective of the analysis presented in this article, three important conclusions have to be remembered:

a) if in traditional economic theory we discussed problems connected to the balance between demand and offer and the means in which the income is distributed in the process of exchange or in the efficient allocation of resources, the new theory brings an approach according to which a great part of market deficiencies can be the result of asymmetric distribution of information.

b) Even if information asymmetry offered an impulse for a more active involvement of the state in the economic activity, the economic agents who activate on the market with asymmetrical information try, on the one hand, to use information asymmetry in their favor and, on the other hand, to ensure the conditions for the respective market to adapt its functioning mechanisms. In this context, economic agents have strong reasons to counteract the adverse effects of the difficulties regarding the information about market efficiency, the market institutions being themselves interested in solving the problems generated by the asymmetrical distribution of information.

c) By studying the behavior of misinformed economic agents on a market with asymmetrical information, J. Stiglitz brings a distinct contribution by imposing the concept of selecting or „screening” applied on the insurance market. He proves how the less informed part



(the insurance company) can determine the informed part (its clients) to reveal their information about their own risks, and by using the screened information, the insurance company can distinguish the different risk classes offered to the insured, offering them the possibility to choose alternative contracts, where small despagubiri can be replaced with high deductibility.

### **Bibliography**

- Akerlof, G (2001). *Nobel Prize Lecture: Behavioral Macroeconomics and Macroeconomic Behavior*, [www.nobel.se](http://www.nobel.se)
- Gogoneata, B (2004). *Economia riscului și incertitudinii*, București, Editura Economică.
- Lindbeck, A (2010). *The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel (1969-2010)*, *The Nobel Foundation's Internetmuseum*, [www.nobel.se/economics](http://www.nobel.se/economics).
- Spence, M (2002). *Signaling in Retrospect and the Informational Structure of Market*, in T. Fragmye (ed.), *The Nobel Prizes 2001*, Stockholm, Nobel Foundation.
- Stigler, G (1961). *The Economics of Information*, in „The Journal of Political Economy”, 63, 3, p. 213-225.
- Stiglitz, J (2002). *Information and the Change in the Paradigm in Economics*, in „The American Economic Review”, 92, 3, p. 460-501.
- Simandan, M (2008). *Arguments Upon Three Specific Phenomena of Asymmetrical Information*, in vol. *Theoretical Developments in Contemporary Economics*, Timisoara, Mirton Publishing House, p. 404-412.
- Simandan, M (2010). *Teoria piețelor cu informația asimetrică*, în vol. *Știință, Economie, Societate*, Arad, Editura Universității “Aurel Vlaicu”, p. 193-205.
- Tasnadi, Al (coord.) (2002). *Doctrină Economice*, București, Editura Academiei de Studii Economice.



