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October 2015

Online at <https://mpra.ub.uni-muenchen.de/67350/>
MPRA Paper No. 67350, posted 20 Oct 2015 05:14 UTC

Rethinking of Coase Theorem: Externalities and Uncertainty

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Abstract

A behaviour of economic agents in many respects depends on taking into account those conditions that have appeared around them. Traditionally, to such conditions, researchers have referred the uncertainty and factors of the institutional control, often projected on a value of the transaction costs. Studies in stimulants for any form of the agents' behaviour leads us to an analysis of the Coase theorem, which is expected to explain a number of similar regularities. However, ambiguous approaches to the theorem interpretation generate conflicts in a perception and identification of externalities. It is a solution to this challenge, which is a focus of this research. In a critical review of works by Coase and his followers, the theorem statement has been made clearer; we have also put forward a hypothesis on an origin of the externalities and introduced additional criteria to identify them. The paper has given a scientific rationale for an author's assumption that the utility of impure goods depends on the vector of the externalities, which ultimately determines the stratification in a field of the externalities (positive or negative).

Keywords: externalities, Coase theorem, uncertainty.

JEL Classifications: A11, B40, B25

1. Introduction

The Coase theorem in any of its interpretations has been for a long time a subject of critical evaluations, numerous objections and even negations. Among researchers involved in a verification of its provisions, there were Grebennikov & Rivera (2007), Shapiro (1974), Allen (1998), Zerbe (1980), etc. It seems that the whole barrage of criticism and debates has as its basis that numerous wordings for the theorem were incorrect and even inconsistent with Coase's ideas. In some cases, judgmental conclusions of the resource allocation effectiveness, that make, according to widespread beliefs, its “smooth” statement, do not have sufficient arguments. This is also fair for its “severe” form, when we are also talking about the zero transaction costs. This combines two paradoxical terms in quite a non-obvious conclusion. It is this cornerstone, which makes a situation when the theorem has become a kind of a long-held conventional assumption. Further insistence on such a dogmatic paradigm within the institutional economics would be a mistake.

Available theoretical contradictions are mainly embodied in a challenge of the perception and the correct identification of the externalities. Their appearance in the economics, one way or another, is associated with the transaction costs and the uncertainty. At the same time, the strict implementation of the theorem's original hypotheses as such allows us to say of a lack of criteria using, which we consider the externalities positive or negative. Only after a verification of these parameters, one may thoroughly discuss ways and opportunities to internalize the externalities, surely, if necessary. That is why a focus of this research is mainly on a detailed analysis of Coase's provisions, as well as those of his followers. It

would not be an exaggeration to say that a falsification of the controversial content of the theorem puts a fatal barrier for a development of theoretical ideas in the today's institutionalism.

In this context, clarifications for the Coase theorem and criterial conditions of the externalities identification may solve a number of academic challenges regarding research in a behaviour of economic agents in terms of changing environment parameters. So, we pay the primary attention here to the uncertainty of various types, which in a sequential cycle implement an opportunity to make changes to the externalities. The author's approach assumes hypothesizing and a thorough argumentation for a number of hypotheses, which are presented in detail below.

2. Literature Review

2.1. The Theorem Interpretation

It is commonly believed that the Coase theorem was stated on the basis of Coase's ideas by eminent researcher Stigler, who was the person giving them a much more distinctive and concise form, "the theorem... says that in terms of the perfect competition, the individual and public [social] costs will be zero" (Stigler, 1966, p. 113). Nevertheless, it has turned to be just one among its numerous interpretations. In fact, contrary to the widespread position, the provisions of the theorem had been presented to the academic community something earlier by Coase (Coase, 1959, p. 27) himself. However, it is the wording by Stigler that has become the most well known and cited in academic papers. At the same time, so far, there have been in use various versions for the theorem proposed by other researchers. For example, among those, who put forward their own interpretation with an eye on the Coase's research, we may refer to Calabresi (1968), Regan (1972), Polinsky (1974) and Allen (1999). Another group of researchers is much more conservative in their views on the externalities. In their papers, one may find quite a similar description for the theorem preventing us from saying of any differences in approaches. Into this group we may include papers by Halperin, Ignatiev & Morgunov (1999), Grebennikov & Rivera (2007), Tarushkin (2004), Kapelyushnikov (2006), etc.

The disunity between interpretations of the theorem is primarily explained with the fact that it has embodied a number of fundamental provisions sounded by Coase, which can be hardly combined in the synectic way in a single axiomatic statement. In addition, it is not a surprise that wordings of the theorem are essentially different, without losing an important epistemological sense. Anyway, they all describe regularities in representation of the externalities in a form of identities of the institutional mechanism to control relations. The main parameters for this mechanism have still included the costs (the resources) and the effects (outcomes) that determine the utility from making an economic action.

Calabresi (1968, p. 68) believes that the Coase theorem is inextricably connected to the transaction costs and the environment condition. Therefore, he assumes that *in an absence of the transaction costs for a transaction and legal obstacles to bargaining, the inefficient usage of resources might be neutralized with the market itself*. A similar interpretation makes it possible to confirm a conclusion of the relative mutual reporting between the transaction costs and the uncertainty (at least in terms of some types of the uncertainty). Calabresi indirectly points out to an importance of the constitutive condition, under which the self-organization appears in a form of "the represented rationality in the resource use", namely, to the properties of predictability and structured nature of the environment. Legal barriers in this regard are a prototype of imperfect institutional standards, regulations and bureaucratic processes to make a transaction. The transaction costs in the same way describe the environment, market, but in a sense that they are intended to overcome the asymmetry of the information between contractors and consolidate the transaction conditions. Thus, *the rationality in economic processes occurs with sustainability maintenance, when other alternatives are a priori disadvantageous for all the stakeholders, or unknown*. In other words, such the rationality or optimality remain conventional until the time when new alternatives are known. The strictly unilateral statement for the theorem by Calabresi in terms of the rational use of resources does not explain all the heuristic potential, intended by Coase. It is clear that the theorem potential is essentially higher than one could imagine.

Regan (1972, p. 427) puts forward the wording close in its meaning. In contrast to the previous definition, the theorem is complemented with limitations in its applicability. Among other things, it specifies conditions, under which causal relationships will be relevant, “*In the world of the perfect competition, the comprehensive information and the zero transaction costs, when legal standards related to an initial impact of the expenditures, associated with external factors, are not influenced, the distribution of resources in the economics will be efficient*”. We believe that this interpretation of the Coase theorem is exactly the most accurate. It seems to be productive to apply it in an analysis with a number of limitations and observations. Several aspects simultaneously contribute into it. On the one hand, the theorem includes an important point of the perfect competition; on the other hand, it speaks of the distribution efficiency instead the rational use of resources. The last point needs further explanations.

It is assumed that under the perfect competition and the zero transaction costs, any activity should be a priori efficient. Here the everyday uncertainty is eliminated with the availability of the information. The resource allocation exactly becomes possible owing to following the comprehensive information about a mark in the absence of the negative externalities. The only subjective element in this design is the available rationality in decision-making. A change to the environmental conditions due to the permanent apperception of ongoing actions makes changes to the perception of the efficiency. It is clear that in this regard the simple transactions (as opposed to the complicated ones) have been only released from the momental uncertainty. At the same time, complex transactions keep staying influenced by forces to achieve an ambiguous outcome; therefore, it is impossible to say of any efficient resource allocation for them.

Other interpretations of the theorem are fully difficult to be included in a circle of credible wordings. So, Polinsky refers to a shortened version of the theorem, assuming the following statement, “If the transaction costs are zero, and a structure of legal standards is insignificant, the efficiency will be anyway achieved” (Polinsky, 1974, p. 1665). We should mention *that the cumulative transaction costs, in our view, even under conditions of the perfect competition, are unable to be zero. According to the theorem in its truly correct interpretation, the external transaction costs are only not available. The costs of an internal nature remain positive, as economic agents have been still in need to coordinate their activities with that adjustment or adaptation to the conditions of the perfect competition.* Unambiguous conclusions by some researchers saying the contrary are incorrect. A good example is Allen, who makes a categorical generalization, “with the absent transaction costs, the resource allocation does not depend on the distribution of property rights” (Allen, 1999, p. 897). However, this interpretation of the theorem does not contain terms of its applicability. A remark that with the zero transaction costs the resources are invariable in respect to the property rights faces a number of inconsistencies.

Firstly, as we have mentioned earlier, the zero transaction costs may only appear in the “Robinson Crusoe economy”, and even in terms of the perfect competition, economic agents bear their internal transaction costs. Thus, *the overall transaction costs are positive and not zero.* At the same time, a review of other types of markets with such a statement for the theorem, including the perfectly competitive market, becomes possible when we only say of external transaction costs instead of all kinds of transaction costs.

Secondly, under real economic conditions, an interrelation between the allocation of resources and the distribution of the property rights is in place. An economic agent, acting according to the principle of economic rationality, maximizes its own utility, which, on the one hand, is described with an increase in a return on the resources available, and, on the other hand, an increase in resources as such, while the property rights play here a crucial role.

The completed review of papers and their critical analysis has given us an opportunity to identify a group of researchers, who are inclined to adhere to the long-held interpretation for the Coase theorem. In the most papers, it is stated as follows: *if the property rights are well defined and the transaction costs are zero, then the resource placement [allocation] (production profile) will remain unchanged and efficient, regardless of changes to the distribution of the property rights* (Kapelyushnikov, 2006; Arkhipov, 2009;

Tarushkin, 2004, et al). In the discussion regarding the zero transaction costs, we have already made the appropriate remark. Therefore, we will proceed with another interpretation for the theorem.

Among papers in this regard, we may refer specifically to Galperin, Ignatiev & Morgunov (1999, p. 473), who say that the externalities may be converted into the internalities by securing the property rights. Hence, the Coase theorem in their version takes a completely different form, “the externalities may be internalized by securing the property rights for objects that generate them and by sharing these rights if it does not require the high transaction costs. If these rights are well outlined and may be traded on a market, the market mechanism may bring parties to an efficient agreement”. To this, we should add that the issue of the externalities lies in the inefficient allocation and use of resources and products in the economics due to differences between the individual and public costs or the individual and public utilities (Sidorovich, 2001, p. 216). Obviously, a solution to this issue cannot avoid specifying a value of the costs. Our ideas in this regard will be presented below.

To summarize the abovementioned, we may conclude that the reviewed interpretations demand their essential refinement. Their use in a learning process may lead to a number of paradoxes, which would be mostly contrary to the economic logic. The disunity and ambiguity of interpretations for the theorem assume direct or indirect vulgarization of Coase’s ideas. At the same time, in view of all possible statements, we do not think reasonable to make our own contribution into the theoremizing to present the own view of the theorem. The best option to neutralize disagreements is elaboration of fundamental provisions stated earlier by Coase himself. They are they that help to make a holistic view of the issue.

2.2. Coase View of the Transaction Costs and the Externalities

2.2.1. Original Wording for the Theorem

When reviewing the theorem, it is impossible to ignore its primary source, i.e. the paper by Coase entitled “The Problem of Social Cost”. It has produced many interpretations, sometimes not only different between each other, but also from ideas and author’s conclusions mentioned in the paper. There are no doubts that a search for a starting point in a research is an important point to rethink the theorem compared to known wordings.

As a confirmation for this statement, it is amazing that Coase does not use a concept of the transaction costs as such, although the most of publications mentioned in the review of literature include them. Actually, they stand for expenditures in time of making a deal, which “notwithstanding the pricing system, assume smooth functioning (i.e. without the costs)” (Coase, 1960, p. 6). At the same time, an absence of the transaction costs for a deal aimed at its making does not mean that the transaction costs must be zero for the theorem hypothesis to be true. It is important to remember that the costs to make a deal are in a sense a part of the transaction costs. Considering Coase’s view of painless deals at the market (Ibidem, p. 10), we can reasonably conclude that the costs that an economic agent may have at all stages of deal-making (before making the deal, in time of the deal and when the deal has already been made), are nothing else but *the external* transaction costs.

Another aspect of the non-compliance is a dispositive statement (according to some theorems) that concerns issues of resource allocation, specifically - a nature of the allocation. We share the Coase’s view and have reasonably proved a role of the allocation optimality, mentioned above. Regarding the optimality, Coase says, “if we want to achieve the best allocation of resources, it is desirable for the both parties to consider and undertake harmful effects from (troubles) decision-making in their activities” (Ibidem, p. 13). This quite an important update let us saying of the inaccuracy in many statements of the theorem. Looking through the mentioned Coase’s paper, we also face a number of considerations of the efficiency, but only in a sense that the initial delineation of legal rights influences the performance of the economic system (Ibidem, p. 16) rather than the performance in the resource allocation or usage.

As a result, the original version of the Coase theorem, published in his work, sounds that “if market operations were free of charge, all the questions (issues of mutual equitableness) would assume that rights of different parties should be clearly defined with easily forecasted results from legal actions”.

(Ibidem, p. 19) This statement is very far from the conclusions, included into the theorem by other researchers. Nevertheless, in such a form, the theorem reveals a clear correlation between the uncertainty and the transaction costs.

2.2.2. Provisions of Coase's Theory

Based on the original wording for the Coase theorem, one may make a number of important theoretical conclusions (Tarushkin, 2004, p. 29) that embodies the fundamental provisions.

Firstly, the theorem establishes a connection between the environmental uncertainty and the enforcement of the property rights. As a result, an influence of the externalities on a behaviour of economic agents not involved in making a deal, becomes clearer and only takes an effect when the property rights have not been defined or enforced. It is worth mentioning that the positive and negative externalities manifest themselves not depending on an extent, to which the property rights have been secured. External effects are an unavoidable consequence from the available open business system. Their manifestation can be only neutralized up to an acceptable level, as the market is “constantly in a state of the uncertainty and movement” (Slater, 1996, p. 50).

A market balance is not constant, and at any given moment, it faces changes. An ability of the externalities to be internalized with the applied theory of Pigou (“of differential taxes or subsidies” (Pigou, 1920, p. 193)) is a responding measure to an increase in differences between individual interests and the interests of the market and the society (Ibidem, pp. 189-190). Here we follow the opinion that a transformation of the externalities into the internalities with an artificial control by the government or with a natural control by other institutions of self-organization only causes a temporary, and quite a short-term internalization. The market movement, one way or another, will give an impulse causing the situation, when measures previously taken are not enough or redundant with respect to the given case. The perfect world of economic agents, *ceteris paribus*, may partially correspond to the logic, “when the property rights have been clearly defined, then all the externalities are internalized” (Tarushkin, 2004, p. 29). However, it is seemingly not enough for all the externalities to become internal.

Secondly, the Coase theorem gives grounds to say that the transaction costs (at least, external) are an indicator to measure the environmental uncertainty. For other types of the uncertainty, we may put a hypothesis that the internal transaction costs are generated by the uncertainty of the 2nd and 3rd types (namely, the uncertainty of decision making and consequences from these decisions, respectively). As we have said before, the zero transaction costs only appear in the economics of one subject – the Robinson Crusoe Economy. Each entity will have the internal costs to coordinate and maintain “the economic system on the go”. This reasonably suggests that *when the external transaction costs are positive, and the property rights have not been defined or properly executed, there is the uncertainty in the economic system and it causes the constant and continuous allocation of resources between the economic agents.*

Third, going away from the transaction costs, the Coase theorem outlines a way for a possible solution to the externalities. *Institutional horizontal expanding* in a form of making basic and derivative imperative standards (including the property rights), structures the economic cooperation. External consequences for other agents with growing scales of the institutional expansion are much more considered in transformational functions presented in its errors. The top-down *expansion of the institutional system* is necessary in this context, “for a case” when the manifestation of self-organization had been innated at a level of genetics. In those special moments, when the self-organization is limited or faces controversy institutional standards, the top-down expansion occurs by itself, as a response to a collision of rules and mechanisms that prevent the self-organization.

Fourthly, referring to the self-organisation issue, it is worth paying attention to one of the consequences from the Coase theorem concerning the government intervention in the economics. A confrontation of Pigou and Coase' ideas may be solved with quite a simple modification of those differential taxes and subsidies, which limit a rational choice of counterparties. As a result, resources are not withdrawn from the economics; instead, they are only redistributed through a kind of contract between parties, producing a new value of the rational behaviour. Thus, the government intervention question is reduced to an extent, to

which the economics (or a group of agents) is capable to the self-organizing and a value of the cost of the rational behaviour for all stakeholders. As a result, with the perfect balance of powers, the horizontal institutional expanding lets us limit the intervention in the economics. A confirmation for this thesis can be found in Coase's paper, he suggests that the government intervention is only specifying the property rights, i.e. making an exclusivity regime, otherwise, "if we try to imagine a system of the property rights, which would be required, and deals, to be made ... then ... paying a compensation for a damage, to which [the actions have led – author's remark] to obtain the cost of a good, [will evidence – author's remark] probably numerous 'market failures'. Such situations usually lead ... to the comprehensive government intervention" (Coase, 1995, p. 73).

In this regard, Calabressi and Melamed present their amazing views. They expand the typology of rights, introducing the property rights, the law of responsibility and the inalienable rights. However, the most important finding of the researchers is that "the specification of the property rights is not enough to ensure the best for social results" (Calabressi & Melamed, 1972). This conclusion is largely contrary to the ideas of Coase as the "rights of responsibility are associated with the higher degree of the government intervention than with the property rights and the inalienable rights because the government should determine at the beginning the significance of [a value of] the right" (Conybeare, 1980, p. 313).

Fifth, in view of some researches, the Coase theorem defines a role and significance of the private property. As the property rights arise because of actions that generate rights, the recognition of these rights makes a foundation for the future exchanges and appearance of new actions that redistribute rights. As a result, the foundation appears, without which the economic exchange would not be possible. Development of the private property, rather expanding the rights for it, in the sense that not all the property rights have been fully defined and implemented, will reduce the uncertainty of the environment and make it more predictable.

Having examined the Coase theorem, made a number of its provisions clearer and systematized conclusions, we should refer to theoretical and methodological computations for the ratio of *individual and social costs*, which determine an appearance of the positive and negative externalities.

3. Method

3.1. The Basic Criteria to Classify the Externalities

Taking as true a hypothesis that interests of each party (economic agents) may be measured with a ratio of common and social effects, it makes sense to identify cost elements taken to their calculation. To do this, we should refer to categories of the costs and the value to be discussed below. It is important to clarify here that *individual and social effects are calculated with a difference between the unearned incremented value of the received goods from the positive externalities and the costs, which have made possible such an increment.*

Given that a calculation of the unearned incremental cost of the goods utility also goes in pair with the utility category, for which a quantitative measure in any plausible form is not available, we propose to use for this an indicator of the opportunity cost for those conventional goods that are a consequence of the positive externalities; and the index of the opportunity damage for the negative externalities. Considering the parameter of the unearned incremental cost, we need to make a number of assumptions. First, the economic agent rationally acts with its usual maximization of the return; and, secondly, in estimates of the received goods the agent is limited by the market in a sense that all the resources are acquired on it and at a market price.

Referring to an indicator for the alternative damage, we should make clearer how to measure the social and individual costs. It is accepted that the social costs include the individual costs and the external costs (e.g., see: Mankiw, 2011, p. 198; Lipsey & Harbury, 1992, p. 87; Taylor & Weerapana, 2009, p. 431; Just, Hueth & Schmitz, 2004, p. 529; McEachern, 2008, p. 373 et al.). A comparison between the individual and the social costs is a basis for a definition of the positive and negative externalities. The most researchers think that "the negative externalities (external effects) arise in such a case, when the

individual costs are lower than the social ones, in case of the positive externalities - on the contrary, when the social costs are lower than the individual” (Nigmatullina, 2011, p. 37.) Using this inequality between the costs, the criterion condition to classify the externalities seems to be quite reasonable. However, considering all the circumstances to assess the individual costs, one should pay attention to the content of the social costs.

The well-known thesis that the social costs include, among other things, the individual costs needs clarifications and can be disproved. It seems that a concept of the social costs can be applied both narrowly and in its broad interpretation. *The narrow wording for the social costs comes from the fact that the social (public) costs are nothing else but the costs incurred by other subjects in relation to the particular economic agent.* This interpretation is to the most part subjective. It assumes that the initiating economic agent is excluded from a total circle of subjects, whose costs are taken into account and accepted to find the total costs. *The broad wording is based on the return statement saying that the initiating economic agent is equally considered regarding the other subjects and its costs should be included as a part of a base to count the social (public) costs.*

It seems that the logic to calculate the social costs was build on the wide wording that has become a true dogma within the institutional theory. We believe that such logic causes a problem of double counting. As a result, the inequation is reduced to a value of the external costs. A record for the inequation becomes in this case as follows:

$$PosExtern : \begin{cases} IndC > SocC, \\ IndC > ForC + IndC, \\ 0 > ForC. \end{cases} \quad (1.1)$$

where *PosExtern* – positive external effects (externalities); *IndC* – individual costs; *SocC* – social (public) costs;
ForC – external costs.

$$NegExtern : \begin{cases} IndC < SocC, \\ IndC < ForC + IndC, \\ 0 < ForC. \end{cases} \quad (1.2)$$

with $ForC \geq 0$ and $NegExtern: ForC \in C$

where *NegExtern* – negative external effects (externalities).

It is clear from the systems of inequations that a size of the individual costs does not influence the typing of the externalities. This actually confirms our idea (regarding the social costs) that to find an operator for the externalities, we need to go from their narrow instead of the broad understanding. Then the inequation will be valid.

3.2. Contradictions in Methodology and Hypothesis

Logical comparisons and research let us believe that conclusions from the first and second inequations (1.1 and 1.2 respectively) have no economic sense. Coming from the broad understanding of the social costs, under conditions where the externalities are over zero, the positive externalities appear. The situation is different when the conditions change – finding solutions becomes simply impossible. The matter is that as the costs cannot be negative, then under conditions, when the identification of the negative externalities is in progress, the externalities become a complex value. As a result, there is no real solution to the inequation (1.2).

The only option possible to eliminate contradictions is that with the negative externalities the inequation is unstrict (as assumed). Then, applying the assumption, a criterion for externality typing may be described as follows: with the external costs equal or less than zero, the negative externalities occur and it is wrong. The correct assumption would be a reverse one, i.e. with that the external costs over zero the negative externalities arise, while when they are zero – the positive ones. To say this, one may go from the broad understanding of the social costs and include the new criterion into the system of conditions. As an additional criterion, we propose using the utility criterion. Surely, it is sometimes impossible to identify a quantitative value for the utility of a good or a set of goods ¹, but other is possible – to find a field of the utility.

Thus, in relation to the externalities, we may hypothesize that the *positive externalities will be available in presence of the public utility; while the negative – under a condition, when the utility is missing, or rather, when any losses (damages) appear*. Hence, the externalities from activities by the initiating economic agent occur if and only if the external costs in relation to a resulting effect (good) are not available, but at the same time, there is some utility from this good. In the similar way, we can also describe conditions for the negative externalities, when the external costs in relation to the resulting effect (good) are over zero, and their impact causes a damage.

Despite all the grounds for such judgments, we are not inclined to absolutize the mentioned criteria to classify the externalities. As the externalities in their nature and content are indispensable, then any action of an initiating economic agent may be either positive or negative, or neutral. Criteria are much legitimate with other things being equal, when the economic behaviour of the initiating agent is discrete. But there is an option when the economic agent brings its position to the conditional optimum and is adjusting and fitting to changing environmental conditions, this means that it will prefer a solution that only partially meets the original (e.g., having implemented an institutional opportunity to get a compensation for the negative externalities).

The mentioned indispensability of the externalities in this regard is not opposed to an option of their neutralization as viewed by Coase. His solution to the issue of the externalities is in line with the rational of the economic behaviour when building-up the property rights and available institutions to monitor their exercising, in the natural and quite logical way, cause that the agent takes into account a cumulative side effect for all the third parties, whose property rights are associated with results of operations. On the contrary, such a conclusion says that *the externalities can be internalized if and only if the vartational uncertainty manifests itself* ². *Making new ownership rights is nothing else but the artificial making the new “rules of the game”*. The externalities can certainly be internalized by institutional expansion as a result of the manifested vartational uncertainty and the environmental uncertainty, while one should pay attention to the mentioned additions with regard to the externalities identifying as a criterion. From here there is the second hypothesis saying that *the externalities are a result of the available environmental uncertainty, which to some extent is solved with the institutional expansion*. The statics of the conventional examples given by Coase imposes a number of restrictions on the applicability of the uncertainty analysis to develop a behaviour pattern. To maintain the integrity of theoretical points, we see efficient to keep the vartational uncertainty within the pattern, but with the zero value. In other words, the given uncertainty in Coase’s static examples has not enough time to appear, as the cycle of a successive

¹ “... it is impossible to express the utility ... in absolute units, because there is objectively no ‘unit of the welfare’” (Valtuh, 1965, p. 175).

² The vartational uncertainty is a powerful, but not the only catalyst for the institutional expanding. An additional incentive for new institutions to be deployed, new standards, regulations and mechanisms to be established is the general uncertainty of the environment. It is worth here paying attention to a nature of the institutional expanding, which can manifest itself both proactively and in a forced manner. To our mind, the vartational uncertainty says of the forced nature of a transformation of the institutional order, while the uncertainty of the environment says of its proactiveness, which demonstrates an ability to self-organization and adjustment. The vartational uncertainty term was introduced into scientific circulation by the author of this paper (for more details see Kuzmin (2012)).

change to the uncertainties is interrupted before its end. In the real economics, the cycle will end closed and the variational uncertainty will manifest itself.

Thus, based on the narrow understanding of the social costs, we can include among them the costs that depend on the direct and indirect damage of all stakeholders (the third parties) with the exception of the costs occurred by the initiating economic agent. At the same time, there is a distinct disadvantage in the narrow understanding of the social costs. As an appearance and an impact of the negative externalities do not only influence other subjects, but also the initiating economic agents, it is necessary to enter into the books those costs that are caused by them due to the available feedback. By the classification, such costs are not included in any of the known groups. I think that it would be reasonable to consider such costs as the extra expenditures. Some value of these costs may be absorbed in the costs of “an error” regarding the transformational or transactional function. However, a clarification of similar phenomena goes beyond the scope of this research.

4. Discussion

Taking the externalities that appear in the economics as a kind of conventional goods, we may reveal distinct parallels between the utility theory and the theory of externalities. To do this, we refer to the action of analogies when the externalities are understood as a commodity, while an impact of the externalities as a result of the acceptance-free deal (by analogy with the offer)³. In this case, the public offer is a result of the social contract, where a ban for actions is expressed with laws and regulations, assuming the commensurate responsibility. Hence, when there are no such standards, any subject feels free to make both positive and negative externalities.

It is necessary to explain that in case of the positive externalities, there is no fee to get goods; otherwise, with such a fee in place, a status of the externalities would be lost. With regard to the negative externalities, the similar conclusion would be fair, although, here in the presence of the damage, the utility for the third parties does not appear. It is lost in the profit of the initiating economic agent. Costs incurred by the third parties with the negative externalities, may be in part correlated with the opportunity cost, which “the consumer” has paid for a good or a service without the measured utility of the good for the himself / herself. As a result, the incurred costs are not covered with the expected value (utility), while, on the contrary, they cause them a damage, reducing their own value (capitalization).

To sum up the abovementioned regarding the positive and negative externalities, as well as individual and social costs, *it makes sense to introduce a refined understanding of criterial conditions, under which the externalities appear*, which is presented as follows:

(2.1)

$$PosExtern : \begin{cases} IndC > SocC, \\ IndC > ForC; \\ U_c > 0; \\ \lim ForC(VC_{adverse}) \rightarrow 0. \end{cases}$$

where U_c – external (social / public) benefit; $VC_{adverse}$ – direct or indirect external loss from an influence of the externalities.

(2.2)

³ For this case, there is a very important remark that a transaction is acceptance-free. In other words, under ideal conditions of the comprehensive certainty, the third parties would only have a focus on the positive externalities, while the negative externalities would be suppressed. However, the real conditions do not let us achieve the sufficient certainty for, firstly, economic agents to have an opportunity to respond to any actions by other stakeholders; secondly, to have the comprehensive and accurate information on consequences from these actions before their implementation.

$$NegExtern : \begin{cases} IndC < SocC, \\ IndC < ForC; \\ \lim U_c \rightarrow 0; \\ ForC(VC_{adverse}) \geq 0. \end{cases}$$

The positive and negative externalities from formulae (2.1) and (2.2) are differentiated in their simultaneous meeting two criteria. However, from here we may conclude that there are options, when one of the criteria - the utility - may take other values than those specified in assumptions. Therefore, the question of typing for the externalities, when the assumption by the costs is met, while by the utility is not met, has remained polemical.

In this regard, it is necessary to pay attention to approaches that present the relationship between the utility category and such measures, as the cost and the price. Into the circle of researchers, who laid the fundamentals in this field, we may include Marshall (1890), Orzhentsky (1895), Ovsiyenko (1983), Raleygh (1888), etc. One of the first publications, which establishes a clear relationship between the price and the utility, is Locke's paper. He assumes that a natural value of any thing is in its ability to meet needs, "and the more they contribute into our well-being, the more their price is" (Locke, 1691, p. 66). This statement was later used by Smith (1812, p. 1, 64) to support and develop his own ideas.

In works by other researchers engaged in this field of interests, the utility was seen through a prism of market pricing. Rykachev makes a fair remark, saying, "the cost' and 'the utility' ... are found in a struggle of the supply and the demand" (Rykachev, 1903, p. 84). Thus, the somewhat different view appears validated by Marx (1949, p. 660) in an availability of the consumer and exchange value, based on the "natural utility". Before there had been permanently appeared ideas that the very utility makes a basis to make an exchange. In this manner, Raleygh (1888, p. 75), in assessments of the demand, referred to the utility associating it with a product or a good, for which it is possible to determine a fee for consumption. Marshall had a similar view saying, "The expediency or the utility of a thing ... is usually measured with a value of the money that the person [the consumer – author's remark] is willing to pay for it" (Marshall, 1890, p. 151). Thus, the functioning of any economic agent is primarily focused on making the utility and enhancing it in a tangible or intangible form. Producing 'the thing' without the utility will cause the case when its value is missing, even taking into account spent resources to get it. In other words, "the utility serves as the main function and the target function of the immediate social specific labour" (Nauchitel' & Smirnov, 1979, p. 92). This thesis is confirmed in other papers. Having compared several goods, Engels quite reasonably concluded, "if production costs for the two things are the same, then the benefit will be a decisive factor to determine their external value" (Engels, 1955, p. 553). This conclusion is difficult to be overestimated, in fact, it gives an answer to the question of the mutually subordinated utility and the costs.

A number of characteristics of the utility is specifically seen in a case of the negative externalities. If for the positive externalities any utility is not paid and no any significant external costs appear to consume it and further use, then for the negative externalities the situation is contrary. It is with the negative externalities when there are changes to consumer properties of assets. Given that an impact of the effect is expressed in both the direct and indirect damage, we may reasonably assume that the consumer properties of available resources will be partially or completely changed. We think that the consumer properties as a term in this manner takes a slightly different meaning than in its traditional understanding. On the one hand, an activity of the economic agent is described with the productive efficiency of the transformation function. It is known that this process includes at least three larger units, i.e. an entrance, a direct conversion, and an exit. The impact of the negative externalities is possible at all stages of a transformation, therefore both raw materials, semi-finished products and finished products will be subject to changes. On the other hand, the economic agent may operate without active transactions and function

in a passive mode, such as, e.g., giving its property for rent. In this case, the negative externalities may also affect a status of these assets and decrease their consumption (custom) properties.

Based on the specifics, with which the consumer properties appear, we may say that in the context of the theory of the externalities, the external costs will depend on characteristics of the utility. This conclusion needs some author's remarks. Firstly, as we have already mentioned, the costs appear in response to a change to the constant position of the optimality. They are also described with the fact that the benefit is maximized at a required level. Secondly, an impact of the externalities may only be identified after changes to the consumer properties that either lead to an appearance of the costs, or do not. Then a role of the utility as a basic criterion to include the externalities into the positive or negative ones does not require more evidence and seems to be quite scientifically reasonable. Thus, based on these conclusions from the synectic review of the mechanism to make the externalities, we conclude that the *utility theory only identifies the vector of the externalities and the stratification of the field of externalities (positive or negative) and ultimately depends on whether there is the utility (or the maleficence) in place for a subject*

5. Conclusion

A summary of the findings let us confidently say of available significant contradictions in the Coase's theory. As we have already seen, the theorem is quite different from the perfect description of economic regularities. Securing or expanding the property rights is not yet a condition, under which the transaction costs are zero, as vice versa. It becomes clear that this is not sufficient. At the same time, other statements for the theorem presented by researchers, to the most extent distort the original promise inherent to Coase's ideas. Our considerations are partly a solution to the gathered disagreements introducing additional criterial conditions to identify externalities. They, first of all, include the utility, which gives to estimations a weighted character and eliminates cases, where the positive externalities (in theory) manifest themselves with the "negative benefit". Besides, we have made an important refinement for the approach to an assessment of the social costs. Their narrow interpretation is with reason opposed to the broad definition, where the costs of an initiating agent regarding the externalities are included in the total bulk of the costs incurred by all subjects within the economic systems.

In this regard, a question of internalization for the externalities is no less than relevant. Our understanding of this process derives from an assumption that the externalities are a result of the available uncertainty of the environment, which to some extent is neutralized with horizontal or vertical institutional extending. From here, we conclude that the externalities may only be converted into the internalities in terms of the variational uncertainty, owing to which new "rules of the game" are made. However, the statics of Coase's conventional examples imposes a number of restrictions on the applicability of the uncertainty analysis to develop the behaviour model. As potential for further research in this field, we consider a search for a point of optimality with a ratio of positive and negative cumulative effects to be presented with further papers.

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