

# The Unilateral Promise to Enter a Contract

Diana Geanina Ionaș

*Law School, Transylvania University of Brasov, Romania, diana\_ionas@yahoo.com*

**ABSTRACT:** The conclusion of a contract can occur in a spontaneous manner, by unequivocally accepting an offer, or preceded by negotiation between parties, whether extensive or simpler. Within these negotiations, the parties can conclude certain preparative contracts which precede the conclusion of the main contract. Among these is the unilateral promise to enter a contract. In practice, it is often difficult to choose between the options provided by the lawmaker so that the document is an accurate expression of the parties' will. Therefore, legal construction requires clear and precise theoretical approaches that establish the validity conditions, the nature, and legal effects of the contract to efficiently protect the parties. The current paper presents an extensive study of the unilateral promise to enter a contract, from a historical perspective, by pointing out and commenting on the controversial aspects of specialty literature. By using the comparative method, the paper describes the institution of the unilateral promise to enter a contract in relation to other systems of law, thus being a useful tool for both doctrinarians and practitioners.

**KEYWORDS:** negotiations, contract, legal nature, conditions, effects, compared law

## Introductory issues

Contract is undoubtedly an expression of the freedom of the individual, as it is unanimously acknowledged that individual will is the fundament of contract (Panțu 2021). According to Article 1166 of the Civil Code, „the contract is the agreement of wills reached by two or more people with the intention of creating, changing or terminating a legal relation.” Given these legal provisions, doctrine has correctly stated that the existence of an agreement represents the fundamental characteristic of a contract (Schmidt-Szalewski 1990, 545). However, achieving the agreement of wills does not occur instantaneously, as it is often the result of negotiation. The term *negotiation* – with a meaning close to the one we use nowadays – appears for the first time in the sixth century BC, in ancient Rome, at a time in which the population of the citadel, the rich and the free, but not the nobles, needed to handle private business or held certain public offices. The means by which negotiation operates is represented by the mutual concessions of the parties, by the compromise determined by the declared intent to reach a solution mutually acceptable and beneficial for both parties. Concession represents the unilateral rescinding of one or more of the positions previously held by one of the parties in order to create favorable conditions for an agreement (Almășan 2013, 127). When concession is mutual, compromise occurs. Negotiation, whether direct or assisted, which occurs with the purpose of concluding an agreement, is characteristic to the precontractual phase. Within these negotiations, the parties can conclude a series of legal acts or facts, some without any contractual value, other of variable contractual value (Pop, Popa and Vidu 2015, 58), but which need to respect the principles of negotiation. These can be classified in contract of negotiations, namely these conventions by which the parties establish the means in which the negotiation will occur, partial contracts, namely conventions by which the parties agree on the negotiation points on which they are in agreement and preparatory contracts, namely those contracts which precede the conclusion of the main contract. One of the preparatory contracts is the unilateral promise of entering into a contract, a legal construction which requires a clear theoretical approach regarding the legal nature, content and legal effects, in order to allow the parties to choose the most appropriate means to reach their purpose. The present paper aims to achieve an exhaustive study on this contract, from a practical and theoretical point of view, as regulated in internal provisions and also in relation to other systems of law.

## **A short history of the unilateral promise of entering a contract in Romanian law**

The promise to enter a contract is not a new institution, as it has roots in the old Roman law. The old Roman law regulated only unilateral contracts, which provided obligations for just one of the parties. The distinction between unilateral and bilateral contracts occurred only in modern law and their classification was made by the parties, by considering the effects they produced (Levy J.- Ph., Castaldo A., 2010, 725).

In Romanian law, the promise to enter a contract is regulated for the first time in the Calimach Code, in Articles 1152 and the following. In the light of the Calimach Code, the promise held the form of an understanding or a specific promise, depending on whether it is accepted or not by the other party. Article 1155 of the Calimach Code distinguished between unilateral understandings, which stipulate obligations for just one of the parties and bilateral understandings, which regulate obligations for both parties.

The Caragea law also contains provisions regarding these understandings in Chapter I of the Third Part, seen as promises “of two or more people.” Unlike the Calimach Code, the Caragea law does not regulate the institution of unilateral promise or understanding.

The 1864 Civil Code did not expressly regulate the promise to enter a contract, as it is a creation of practice and jurisprudence as an answer to the policy of the communist regime of removing immobile goods from the civil circuit.

Although it is not expressly regulated in the current Civil Code, there are numerous texts which reference this institution, as it represents the archetype of the promise to enter a contract (Maurie Ph., Aynes L., Gautier P.-Y., 2009, 66).

Thus, Article 1279 of the Civil Code states that “the promise to enter a contract must contain all the clauses of the contract; in lack thereof, the parties are unable to execute the promise”. Also, Article 1669 third alignment of the Civil Code states that “the provisions of the first and second alignment apply to the unilateral promise of sell or buy, as it is the case”; the fourth alignment of the same article states that „in case of the unilateral promise to buy an individual determined good if, before the promise was executed, the owner sells or mortgages the good, the obligation of the buyer is considered to be rescinded.”

## **The notion, legal nature and area of enforcement of the unilateral promise to enter a contract**

The unilateral promise to enter a contract is that certain contract by which a party, called a *promissory seller* is obliged, to the benefit of the other party, called a *beneficiary*, to conclude a certain contract, at a specific time, if the latter will still opt to enter the contract.

From the point of view of **legal nature**, the unilateral promise is a contract which contains the irrevocable commitment of the promissory seller to enter a contract, in the terms established in the content of the promise on one hand, and the right of choice for the beneficiary, on the other hand. What is specific to the unilateral promise is the fact that the promissory seller is obliged to enter the contract under the conditions of the promise, whereas the beneficiary only has a right and not an obligation of enter the contract under the same conditions. Regarding its content, doctrine stated that it “represents a contract with specific content” ( Popa 2018, 189), as it is unanimously acknowledged that it can't be considered an offer.

The promise of contract is a bilateral judicial act, unnamed, free or onerous, mutual and consensual (in the concept of the new Civil Code, the classification of legal acts in mutual acts and random acts is no longer conditioned by the onerous character of the contract). It represents a main and preparatory contract at the same time: it is a main contract as its existence does not depend on another contract and it is a preparatory contract as its purpose is to guarantee the promised contract.

Regarding the **area of enforcement**, most times, the object of the promise is the future conclusion of a sale contract, but it can also have a practical enforcement in case of many other types of contracts (for example, exchange, lease and so on).

### **The validity conditions of the unilateral promise to enter a contract**

As it is a contract, the unilateral promise is subject to the **general rules of validity** regarding capacity, consent, object and cause, as well as form. Thus, the parties need to have the capacity to enter a contract. Even if the promise does not transfer property, but merely a right of debt, one must consider the serious consequences which might occur on the patrimony of the parties given the possibility of a court decision which can replace the contract or the payment of damages; thus, the parties must have full exercise capacity and must meet all legal requirements in regard to representation of the guardian, as well as those pertaining to the authorization from the guardianship institution and the notice from the family council. Both the promissory seller and the beneficiary must have capacity at the time the unilateral promise of contract is concluded and at the time the main contract is concluded (For the opinion according to which the beneficiary must have capacity only at the time the option is exercised, see Malaurie, Aynes and Gautier 2009, 74). In case the promissory seller dies within the term, his obligations will be passed on to his heirs, who will be obliged to enter the contract under the conditions established in the promise. In case the beneficiary dies within the term established in the promise, his right will be passed on to his heirs, who will be able to exercise the option in the place of their author. The right of the beneficiary to exercise this option will be registered in the successor mass as a right of debt.

Regarding the consent of the parties, it must come from a person who has judgement and must not be affected by any vice. Regarding consent, it is necessary to distinguish between consent provided when the promissory contract is concluded, consent provided when the option is exercised, and the consent provided at the time the main contract is concluded. From this point of view, we believe that the conclusion of the contract, preceded by a promise to enter a contract occurs in three stages: the first one is the conclusion of the promise to enter a contract, the second is the acceptance of the option and the third stage is the conclusion of the promised contract.

As for the vices which can affect consent expressed by a party, we believe that lesion is incompatible with the unilateral promise, as the provisions regarding this vice of consent only pertain to mutual acts; given its content, it is unconceivable in case of unilateral contracts (for contrary opinion according to which lesion can be granted even in case of unilateral acts, see Chirică 2014). As an exception, when the promise is of bilateral character, lesion is possible.

The object of the unilateral promise is the obligation to conclude the promised contract in the future and the cause must exist and it must be licit and moral.

In regard to the **form** of the contract, it is consensual, as the principle regulated by Article 1178 of the Civil Code applies in this case, according to which „the contract is concluded by the simple agreement of will of the parties, who are capable of entering a contract, if the law does not require a certain formality for its valid conclusion”; therefore, validity is not subject to any formal conditions, even if the promised contract would be subject to such conditions. As an exception, under the sanction of annulment, the promise to donate is subject to authentic form. The exception is justified, as there is a need to draw the attention of the promissory donor to the effects of the act on his patrimony, as is the need to verify consent of the person who willingly renounces one of his goods without receiving anything in exchange.

The unilateral promise to enter a contract must contain, according to Article 1279 first alignment of the Civil Code “all those clauses of the promised contract, in lack thereof, the parties are unable to execute the promise”, namely those aspects considered as essential by the parties, regarding the nature of the promised contract. The following clauses can be considered

as essential: the obligation to conclude the contract, if the beneficiary chooses to; the establishment of the essential elements of the promised contract (the identification of the good and the price) and so on.

In case of promissory contract whose object are immobile goods, registration in the cadastral registry is not a validity condition, but merely an opposability condition. Registration in the cadastral register only occurs if the promise regulates the term in which the contract must be concluded, in case the good is already registered in the cadastral registry or in case the promissory seller is registered as the owner of the promised good. Registration can only be requested in the term agreed upon for its execution, 6 months from the expiration of this term is the latest.

### **Effects of the unilateral promise to enter a contract**

Effects of the unilateral promise to enter a contract can be classified in two categories (Bamde 2017):

- a. effects on the beneficiary and
- b. effects on the obligations of the promissory seller

The unilateral promise to enter a contract provides the beneficiary with a right to choose, thus allowing him to enjoy, for a certain period, contractual exclusivity regarding the conclusion of the contract (regarding exclusivity clause, see Matefi and Cardiş 2017, 51-62). Regarding the legal nature of the beneficiary's right of choice, doctrine did not express a unified point of view. Although there were opinions according to which the beneficiary's option is a personal right of debt, most authors claimed that is a conditional right providing the beneficiary with the right to choose whether to conclude the promised contract in the term granted by the promissory seller.

We share this opinion, as we believe that the beneficiary's option meets the three elements which characterize conditional rights: a) the preexistence of a legal situation in which the rights and interests of a person or several are included, namely the promise to enter a contract; b) the power of the holder of the right to change, rescind or recreate the preexisting legal situation, by unilateral act, namely the absolute right of the beneficiary to accept or refuse the conclusion of the contract; c) the people who have rights and interests in the preexisting legal situations must accept the change, rescind or recreate, by unilateral manifestation of will by the holder of the conditional right (Stoica 2023).

The beneficiary's right of option is not a right of debt, as its exercise does not entail a specific action of the passive subject – to give, to do or not to do – but merely provides the holder the right the possibility to act on a preexisting legal situation, thus causing direct effects on the promissory seller, who must obey the will of the beneficiary (Avram 2006, 141).

The beneficiary's right of option is an exclusive right, protected from abuse, as conditional rights are not compatible with the abuse of law (Avram 2006, 141). Based on his right, if the term of option is not expired, the beneficiary can freely accept or refuse to conclude the promised contract. Accepting the promise represents a unilateral legal act which must not meet a special form, as by accepting, the promised contract is not concluded, but the beneficiary merely expresses his agreement in order to conclude the contract under the form stated by law.

Therefore, acceptance can be express or tacit, in which case it can come from the conclusion of the act. The refusal of the beneficiary to conclude the promised contract can also be express or tacit. Tacit refusal results from the passive demeanor of the beneficiary who allows the term to expire without expressing an option.

The beneficiary's right of option can be assigned to another person, freely or of an onerous character, in which situation the third party who is assigned the right replaces the beneficiary. The assignment can occur under the conditions of Article 1315 and the following

of the Civil Code regarding the assignment of the contract, except for the situation in which the parties of the promise expressly agreed upon the inaccessibility of the rights of the beneficiary.

This is a unilateral act of the beneficiary thus resulting in the obligation of the parties to conclude the contract under the form required by law. By accepting the promise, it acquires a bilateral character.

As for the effects of the bilateral promise on the obligations of the promissory seller, we can see that it gives the promissory seller two obligations: an obligation to do, to which it corresponds an obligation to not do.

The content of the obligation to do includes the obligation to conclude the promised contract under the term and conditions which were agreed upon. The promise provides a mandatory contractual nature for the promissory seller's obligation and disrespecting it draws contractual liability.

In regard to the terms of the promise, most times the parties establish a fixed term in which the beneficiary can express choice. This term can be suspensive, when it starts from a certain subsequent time or extinctive when the beneficiary can opt in a certain predetermined term. Disrespecting this term leads to the rescinding of the promise (Benabent 2013, 74).

Doctrine raised the question of which will be the fate of the promissory contract without a specific term. One opinion stated that these contracts were subject to relative annulment (Tița-Niculescu 2017), an opinion which we do not share. Annulment is a civil sanction of the act which was concluded by disrespecting the validity conditions of contracts. The essential validity conditions of contracts are, in accordance with Article 1179 of the Civil Code, the ones regarding capacity. Consent, object, cause and form of the legal act. Lack of term is not a validity condition of the legal act, but a forming element of the contract which affects its execution and opposability. In lack of a term, as an exception from the rule regulated in Article 1669 second alignment of the Civil Code, the execution of the promise can be demanded under the conditions of Article 2524 first alignment of the Civil Code, stating that, in case of legal relations which do not contain a term of execution, the statute of limitation starts from the time the legal relation is concluded. In other words, if the promissory contract does not contain a date by which the contract must be concluded, the statute of limitation starts from the time the convention was concluded. Also, in lack of a term of option, by considering the provisions of Article 906 first alignment of the Civil Code, the request to register the promissory contract in the cadastral registry will be denied. However, this will not lead to the annulment of the promise, but it will render it unopposable to third parties.

Also, in the execution of the obligation to do, the beneficiary will have to conclude the contract under the predetermined conditions, as these are negotiated aspects which pertain to the execution of the contract.

The obligation to not do is the obligation of the promissory seller to not conclude contract with third parties, pertaining to the promised good, within the established term. This is a consequence of Article 627 fourth alignment of the Civil Code, according to which "the unimpeachability clause is presumed in conventions which result in the obligation to pass on property to a determined or determinable person".

The promissory seller's fail in executing the unilateral promise to enter a contract can come from the violation of the obligation to do or from the violation of the obligation to not do. Thus, in case the promissory seller violates his obligation, namely he refuses to conclude the contract as he promised, the other party is entitled to damages or, based on Article 1279 of the Civil Code, he can file a complaint before the court of law, requesting a court decision which replaces the contract. As it is a unilateral contract which provides obligations for just one of the parties, the right to damages or the right to file a complaint belongs only to the beneficiary of the promise and not the promissory seller.

As an exception, these provisions can't be enforced in case of the sale contract. According to Article 1279 second alignment of the Civil Code, "if the promissory seller refuses to conclude

the promised contract, the court of law, upon request from the party who fulfilled its own obligations, will pronounce a decision which can replace the contract, when the nature of the contract allows it and the legal requirements for validity are met". These provisions are corroborated with Article 1669 of the Civil Code and Article 896 first alignment of the Civil Code, according to which, in all cases where the person who is obliged to pass on, change or modify a real right to the benefit of another party, does not execute the obligations needed for the cadastral registration, the court of law, upon request from the interested party, will rule on registration in the cadastral registry.

Given these legal provisions, we can conclude that it is possible for a court decision to replace the actual conclusion of a contract, but this path is acknowledged only for the beneficiary of the promissory contract against the party who was obliged and only if the validity conditions of the contract are met. Or the unilateral promise of sale is a unilateral contract which provides obligations only for the promissory buyer; the creditor, beneficiary of the promise to sell and owner of the goods did not assume any obligation, as he is merely the holder of a right to opt, namely, to sell or not to sell. Consequently, a court decision which replaces a contract is not possible in case of the unilateral promise to buy. In cases in which, before the promise to buy is executed, the owner of the good, who is the beneficiary of the promise and who has no contractual obligation, sells the good or mortgages it, the obligation of the promissory buyer remains without an object and, consequently, becomes extinguished. If the good was already sold to a third party, the promissory buyer can only request damages for the actual damage he caused.

Also, an exception from the rule regulated in Article 1279 second alignment of the Civil Code, in case of the promise to donate, in case the promissory - donor fails to execute, the beneficiary only has the right to claim damages equivalent with the expenses he made and the advantages he granted to third parties in consideration of the promise. This exception is justified by the liberality character of the donation, which entails an objective element, namely an impoverishment of the promissory donor, a decrease in his patrimony, but also a subjective element pertaining to the liberal intention or *animus donandi*. The liberal intention is the very essence of liberality and is based on the wish of the promissory donor to decrease his patrimony in a uninterested manner, to impoverish himself to the benefit of another party; or in the case stated in Article 1279 of the Civil Code there is no *animus donandi*.

In case the promissory seller contracted with a third party within the option term, by violating his obligation to not do, the beneficiary can invoke any of the specific sanctions for disrespecting this clause, namely payment of damages as stated in Article 628 fifth alignment of the Civil Code, resolution of contract or annulment of any subsequent act.

### **The unilateral promise to enter a contract in compared law**

The unilateral promise to enter a contract is known not only in the Romanian system of law, but also in other systems of law, with certain specifics.

Thus, Article 1124 of the French Civil Code regulates that „the unilateral promise is the contract by which one of the parties, the promissory seller, grants the other party, the beneficiary, the right to opt to conclude a contract with determined essential elements, thus requiring consent of the beneficiary.” Seeing the provisions of Article 1124 of the French Civil Code, we notice that the promise to contract has a different legal regime in French law. Although it represents a unilateral contract which provides obligations only for the promissory seller, it is essentially different from the promise to enter a contract regulated by the Romanian lawmaker, as the formation of the contract occurs by the simple acceptance of the option by the beneficiary; thus, a new agreement of wills is not necessary. From this point of view, it resembles the institution of the pact of option, as found in our internal law.

The Belgian Civil Code also regulates the unilateral promise to contract in Book 5, Article 5.25, which states that the option to enter a contract or the unilateral promise of contract, is a contract by which one of the parties grants the beneficiary a right to opt in regard to the conclusion of the promised contract; its essential and substantial elements were established and the agreement of the beneficiary is sufficient in order to conclude a contract. However, we note that, in the vision of the Belgian lawmaker, the pact of option is equivalent with the unilateral promise to enter a contract and entails, similar to French law, that the formation of the contract occurs by the simple acceptance of option by the beneficiary.

In the Canadian province of Quebec, Article 1396 of the Civil Code states that an offer to contract made to a certain person represents a promise to conclude a contract, provided the receiver clearly states his intention of considering the offer and responds in a reasonable time. The exercise of choice can lead to a commitment to subsequently conclude the sale contract, thus transferring property, or the immediate conclusion of the sale contract by which property transfers from one party to another. The exercise of this choice will result in immediate sale only when it is accompanied by the immediate transfer of property to the promissory buyer, according to Article 710 of the Quebec Civil Code, as well as the possession of the immobile good by the promissory buyer.

In Spanish law and doctrine, the unilateral promise of contract is acknowledged as an atypical convention. Article 1541 of the Spanish Civil Code states that the promise to sell or buy, based on agreement regarding the good and price, will allow the parties to mutually claim the respect of the contract.

The Mexican Civil Code regulates the institution of the promise to contract, similar to that in Romania. To be valid, the Mexican Civil Code states that the contract must be concluded in writing, it must meet the validity conditions of the promised contract and must be limited to a certain time.

## Conclusions

The unilateral promise is a preparatory contract, concluded in the negotiation phase, with the purpose of guaranteeing the promised contract. After a time of legislative void, as a result of the reopening of the civil circuit and with the purpose of ensuring its security, the Romanian lawmaker chose to acknowledge, in an indirect manner, this legal institution. Although French law was always a source of inspiration for the Romanian lawmaker, we can see that the Romanian lawmaker chose his own way, not necessarily an original one, of acknowledging the unilateral promise. Although acknowledged, we notice that the manner of legislative regulation is superficial; thus, doctrine has the task to point out the nature and means of functioning of the unilateral promise to enter a contract, so as to respond to the needs of practice.

## References

- Almășan, A. 2013. *Negotiation and conclusion of contracts*. Bucharest: C.H. Beck Publishing House.
- Avram, A. 2006. *The unilateral act in private law*. Bucharest: Hamangiu Publishing House.
- Bamde, A. 2017. *La promesse unilatérale de contrat (vente ou achat): notion, effets, sanctions et réforme des obligations*, accessed on 25.02.2017 at [La promesse unilatérale de contrat \(vente ou achat\): notion, effets, sanctions et réforme des obligations – A. Bamde & J. Bourdoiseau \(aurelienbamde.com\)](http://La promesse unilatérale de contrat (vente ou achat): notion, effets, sanctions et réforme des obligations – A. Bamde & J. Bourdoiseau (aurelienbamde.com)).
- Benabent, A. 2013. *Droit des contrats spéciaux civils et commerciaux*, 10<sup>e</sup> edition, Paris, LGDJ Publishing House.
- Chirică, D. 2014. *Lesion – between the regulation of the old and the new Civil Code*, published in the anniversary volume In memoriam Mircea Mureșan, Universul juridic, Bucharest, accessed on 4.03.2023 at [https://www.juridice.ro/essentials/935/leziunea-intre-reglementarea-vechiului-si-noului-cod-civil#\\_edn23](https://www.juridice.ro/essentials/935/leziunea-intre-reglementarea-vechiului-si-noului-cod-civil#_edn23)
- Civil Code of Quebec accessed on 03.03.2023 at <https://www.legisquebec.gouv.qc.ca/en/document/cs/CCQ-1991?langCont=en#se:1710>.
- French Civil Code, accessed on 03.03.2023 at [https://www.legifrance.gouv.fr/codes/article\\_lc/LEGIARTI000032040818/](https://www.legifrance.gouv.fr/codes/article_lc/LEGIARTI000032040818/).

- Law no. 287/2009 regarding the Civil Code was published in the Official Bulletin of Romania, part I, no 511 of July 24th, 2009, modified by Law no 71/2011 and rectified in the Official Bulletin of Romania, part I, no 427 of June 17th, 2011 and the Official Bulletin of Romania, part I, no 489 of July 8th, 2011.
- Levy, J.- Ph. and Castaldo A. 2010. *Histoire de droit civil*. Paris: Dalloz Publishing House.
- Malaurie, Ph., Aynes L. and Gautier P.-Y. 2009. *Special contracts*. Paris: Defrenois Publishing House, translated in Romanian, Wolters Kluwer Publishing House.
- Matefi, R. and Cardiş M.-M., 2017. “Exclusivity clauses and non-compete clauses – legal mechanisms of protecting professionals or contractual stipulations regarding excessive restraint of freedom of the contracting parties”. In *Universul Juridic Magazine*, no 6/2017.
- Panţu, I. C. *The principle of the freedom of will, a particularity of consumerist consent*, accessed on 18.02.2021 at [CLI-SP14-A20.pdf \(rau.ro\)](#).
- Pop, L., Popa I-F. and Vidu S.I. 2015. *Civil law course. Obligations*. Bucharest: Universul Juridic Publishing House.
- Popa, I. 2018. *Civil contracts*. Volume I, Bucharest, Notarom Publishing House, page 189.
- Schmidt-Szalewski, J., 1990. *La période précontractuelle en droit français*, RID comp. 2/1990, page 545.
- Stoica, V. 2023. *Are conditional rights subject to abusive exercise?*, accessed on 27.02.2023 at [https://www.juridice.ro/essentials/517/pot-fi-drepturile-potestative-exercitate-abuziv#\\_ftn2](https://www.juridice.ro/essentials/517/pot-fi-drepturile-potestative-exercitate-abuziv#_ftn2).
- The Belgian Civil code accessed on 03.03.2023 at <http://www.droitbelge.be/codes.asp#civ>.
- The Spanish Civil Code accessed on 03.03.2023 at <https://www.conceptosjuridicos.com/codigo-civil-articulo-1451/>.
- Țița-Nicolescu, G. 2017. *Precontractual conventions*, accessed on 27.02.2023 at [https://www.universuljuridic.ro/wp-content/uploads/2017/03/02\\_Revista\\_Universul\\_Juridic\\_nr\\_02-2017\\_PAGINAT\\_BT\\_G\\_T\\_Nicolescu.pdf](https://www.universuljuridic.ro/wp-content/uploads/2017/03/02_Revista_Universul_Juridic_nr_02-2017_PAGINAT_BT_G_T_Nicolescu.pdf).