

# The Technology of Blockchain and Smart Contract and Their Regulation Under the Conflict of Laws of the European Union

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## ABSTRACT

The author researches the issues of using smart contracts in the countries of the European Union, points out the problems arising in connection with different legal regulation in different states. The purpose of the study was an establishment of the features of conflict of law regulation of relations in the attitude to smart contracts in accordance with the rules in force in the countries of the European Union. Within the framework of this aim, the objective was determined to formulate general principles on the basis of which legislation in the countries of the European Union could develop in the proposed direction. The methodology of the article was composed of general scientific methods (analysis, synthesis, analogy, deduction, induction), as well as a complex of special legal methods of cognition (formal legal, dogmatic, legal modeling, comparative legal). As a scientific originality of the research, three legislative approaches to smart contracts are pointed out: the complete lack of norms about this aspect, "indirect" and "direct" regulation. The author proposed that special rules could be established for some of the most significant spheres of use of smart contracts at the supranational level in the European Union, for instance, for real estate transactions.

**Keywords:** *conflict of laws, smart contract, blockchain, European law, applicable law, private international law*

## 1. INTRODUCTION

Modern technologies are more and more used in trade turnover. Moreover, the situation with COVID-19 shows that technologies are entering to the various spheres of society life. Online purchases have become as a traditional part of our life. Distance learning has been an ordinary thing. Meetings by Skype are what we can't imagine our cooperation and collaboration.

The economic sphere of civil turnover is the sphere that should actively perceive everything new and innovative. According to this sphere, participants are interested in maximizing profits at the lowest cost. Therefore, the trade turnover is increasingly using various innovative instruments for its own purposes. One of it is a smart contract - a technology that provides the execution of a contract by automatically performing transactions that determine the content of the contract. As a computer program, smart contract can transfer funds or a payment using a special object (e.g., using a cryptocurrency), verify the quality of goods or the delivery of the subject of the contract to the recipient. Smart contract can carry out many options for actions.

There is already the use of programs in some European countries that automatically check:

a) the customer's solvency (funds or other payment instrument (electronic money, cryptocurrency) are initially blocked on the account);

b) the object of sale, its legal turnover (no claims of third parties, mortgage);

c) the seller's rights to complete the transaction.

If the program establishes the admissibility of the transaction, the transfer of funds and the transfer of ownership of real estate in the registry will occur automatically without the participation of subjects of turnover. As you can see, certain usability of system is undeniable.

With all the positive aspects associated with smart contracts, it is impossible not to pick out the administrative and economic risks. Subjects using a smart contract should take these into account. First, there are difficulties in defining the legal regime. In different countries, a smart contract is defined in terms of the law in different ways. Secondly, technical errors are possible as well. Any of the existing technical means are capable of making mistakes. It is impossible to say that a smart contract will be error-free. Thirdly, we shouldn't forget that usually a smart contract is an expensive remedy. Technicians offering blockchain-related services don't provide such services for free. Therefore, when deciding whether to execute a transaction using a smart contract or not, it is necessary to compare the costs that will inevitably arise and the real value that the smart contract will bring.

The law of the European Union, as well as the legislation of particular countries of Europe, doesn't give unambiguous answers to questions about the legal process

of real estate transactions when using a smart contract, the procedure for paying for such transactions with cryptocurrency. The difficulties are added by different legislation in European countries. For example, in Germany, cryptocurrency is recognized as a Financial Instrument (German Banking Act, amendments of 2019), and in Switzerland it can be used as means of payment for real goods but it is not accepted as legal tender (Report of the Swiss federal government, 2014). Therefore, when subjects of different states apply a smart contract, problems will inevitably arise related to the execution of such an agreement. Thus, it's necessary to systematize the legislation of the countries of the European Union in terms of using smart contracts, to offer recommendations for its unification.

Issues related to the use of smart contracts have only recently become the focus of various researches. The further research is needed in the following spheres: comparative work on comparing the rules of law of the countries of the European Union governing a smart contract; validity of law when entering into cross-border transactions; the study of the conflict of laws of the countries of the European Union, which can be applied to relations on the turnover using smart contracts.

## 2. MATERIAL AND METHODS

The purpose of the study was an establishment of the features of conflict of law regulation of relations related to smart contracts in accordance with the rules in force in the countries of the European Union. Also, within the framework of this purpose, the objective was set to formulate general principles on the basis of which legislation in the countries of the European Union could develop in the proposed direction.

In accordance with this aim, the subject and methods of research are determined. The subject of the research was the norms of the legislation of the countries of the European Union, acts and directives of the EU, as well as the provisions of the civil doctrine (mainly scientists from the EU countries, but also from the USA and Russia).

The methodology of the article was, first of all, general scientific methods of cognition (analysis, synthesis, analogy, deduction, induction), which made it possible to draw specific conclusions from the norms of legislation and the provisions of the doctrine. Special legal methods of cognition played a significant role. For example, the formal legal method was used to find out the true meaning of the legislation. The comparative legal method was used to compare the norms of the legislation of different states.

## 3. RESULTS

We can contingently distinguish three legislative approaches to smart contracts: the complete lack of norms about it, "indirect" and "direct" regulation. "Indirect" regulation seems to be up-and-coming, since it guarantees

regulation "for the future", in contrast to the casual regulation of smart contracts, which is only one, but hardly the last of modern digital technologies.

The law of the party registering the server and / or the law of the country of the technician providing the use of the smart contract should apply to the parties' relationships related to smart contracts. As a clarification of this proposal in an international act or national law, the following conflict of laws can be directly established: the right of the country where the server is located; the right of the country of preferential implementation of the activity of a technical specialist personal law of an individual or legal entity that owns the server or provides technical support services for a smart contract

## 4. DISCUSSION

### 4.1. Regulation of smart contracts in the EU countries

The correct definition of the law to be applied to the relations of the parties to a smart contract is already essential, so far as the legal regulation of such relations differs harshly in different countries. In case of a conflict in law, the conflict of laws rules will be applied, which doesn't exclude possible problems in this case. We will try to systematize the legislative approaches in force in various countries of the European Union. At the moment, we can contingently distinguish three legislative approaches to smart contracts: the complete lack of rules about it, "indirect" and "direct" regulation.

The complete lack of norms on smart contracts is a situation in which theory and practice don't recognize any special legal regime for a smart contract, or negate the legality of such technology as an agreement of the parties. It is difficult to imagine that the countries of the European Union will negate the legality of a smart contract. After all, the use of technology in the conclusion of contracts is quite legal from the point of view of the principle of freedom of contract, which is fundamental in the contract law of Europe. However, there are attempts to restrict the possibilities of the parties in a number of non-European countries when they are involved in civil matter associated with smart contracts. For example, China, as a representative that regularly interacts with European business, has a partial prohibition on the use of bitcoins. (according to the People's Bank of China it is established Ban on Initial Coin Offering and Discouraging Bitcoin Mining).

European researchers guess that a smart contract doesn't require regulation, especially in those countries where there is no specific regulation of relations under smart contracts. It is an ordinary contract with no legal specifics. For example, S. Schwerin notes that a smart contract duplicates a transaction [1]. As for German literature, program code is considered as an expression of a contract in a computer language [2].

As for researchers' opinion, smart contract is some kind of special substance that is not a legal category. In the same context, we can suppose that smart contract is only a program code. It's known and understandable only to specialists, it doesn't serve as an expression of will [3]. On the other hand, smart contracts are non-contractual social exchanges [4].

The essence is as follows: a smart contract shouldn't be regulated by law. This approach is only scientific and doesn't always take into account the needs of practice, which identifies the purely legal features of smart contracts. Therefore, if the theory and law in a particular country don't deny the fact of the possibility of using smart contracts, then a complete rejection of legal regulation of the relations arising in this connection is not promising and correct.

In a number of states, the norms of similar legal institutions apply to smart contracts. Thus, there is "indirect" regulation. Relationships associated with smart contracts are subject to contract law (general and specific), certain exceptions, etc. The norms of special acts on the regulation of relations in the digital economy are used even more often. This option appears when deciding the issue of consumer protection when using smart technologies.

Thus, the Spanish authors see no reason not to use the two fundamental laws that are of great importance in contract law. After all, they can create uncertainty in the application of legislation on smart contracts. For instance, we can point out the following acts: Law 7/1998, of 13 of April, of General Conditions of Contract, General Law for the Defence of Consumers and Users, approved by the Royal Legislative Decree 1/2007, of 16 of November [5].

"Indirect" regulation may include regulation of some particular issues. At the same time, the implementation of such legal acts will be with using blockchain and smart contracts. For example, scientists have introduced the concept of "collaborative housing". It can be determined to the different ways in which collaborative economy is applied to the funding, access (including conveyancing) and organization of housing, such as real estate crowd funding, co-housing, room rental or the intermediate tenures (such as the shared ownership) [6].

The essence of the proposed concept is to create new methods of cooperation that will help people get an access to housing. Sometimes it happens through online platforms that facilitate collaboration and tourism. However, sometimes platform can lead to a dangerous situation. By establishing regulation for such particular issues, states "indirectly" address the issue of regulating smart contracts. This develops the practice of using it.

Most states of the world haven't adopted yet special rules on smart contracts, although they have many acts in the field of digital law and the digital economy. Such "indirect" regulation seems to be the most promising, as it guarantees regulation "for the future", in contrast to the casual regulation of smart contracts, which are not the last of up-to-date digital technologies.

Some jurisdictions have directly introduced rules on smart contracts into its civil legislation. As for Italy, the

definition of the concept "smart contract" is directly specified in the law, it is determined that a smart contract must comply with the rules for contracts concluded in writing, as well as the procedure established by the Italian Digitalization Agency [7].

The law in Italy establishes the concept of a smart contract and some rules regarding the rules for its conclusion. In particular, smart contract refers to a computer program based on distributed ledger technologies, the use of which is legally determined by two or more parties on the basis of previously concluded agreements. In other words, smart contract is the translation of an agreement or agreement of two or more parties into a computer program that is able to certify that certain conditions are initiated and automatically executed (for example, goods are delivered after payment, a dispute settlement agreement is created and executed in the case when the positions of both parties coincide, etc.). At the same time, smart contracts must comply with the conditions provided for by law for contracts concluded in writing.

The mind of the Italian researcher is interesting. The author guesses that the main advantage of smart contracts is the almost complete elimination of the risks of default on contractual obligations [8]. However, the "direct" and detailed regulation of smart contracts in Italy points to some concerns. Probably, the use of smart contracts will lead to "almost complete elimination of the risks of breach of obligations."

As you can see, not only theorists offer different approaches to the concept of a smart contract. The legislation of different European countries establishes different regulations on this issue.

#### ***4.2. Conflict of law in the EU countries***

Smart contracts could be an effective remedy for cross-border transactions. This is convenient when the parties to the contract are in different countries, the object of the contract is located in a third country, and the computer performs all operations for the parties. It is not for nothing that the literature describes the prospects for using blockchain and smart contracts to carry out cross-border transactions related to contracts on the transfer of real estate [9]. It's necessary to point out that problems will inevitably be with the choice of applicable law. After all, the law governing relations regarding smart contracts differs in the countries of the European Union. This is discussed above. Of course, the theory and practice of applying such relations are different.

The conflict law of the countries of the European Union does not answer the question of whether the peculiarities of smart contracts should be taken into account when choosing the applicable law. It is not clear whether it is possible to program the law to be applied in the smart contract itself. In such a situation, will the courts consider that the parties have independently chosen the applicable law? There are certain limitations due to the principle of autonomy of the will of the parties [10]. Which ones should apply in this case?

As for scientific point of view, traditional conflict of laws methodology should be used for smart contracts and national or international conflict of laws rules should be applied [11]. Indeed, there are no essential contradictions between contractual relationships arising from the use of smart contract technology and traditional contractual relationships. However, when using smart contracts, it is often difficult to establish the time and place of the conclusion of the transaction, the place of performance of the obligation, the personal law of the party to the transaction and other circumstances that, according to the principles of private international law, mediate the choice of applicable law. Therefore, it can be difficult to use traditional collision bindings.

The authors from the Netherlands suggest, it is necessary to clarify at least the following circumstances in order to achieve clarity on the issue of applicable law to smart contracts: what legal relationship has arisen; what is the nationality (belonging to the law of this or that country) of the parties involved in the relationship; whether international legal acts can be applied; the law of which state is established as applicable under international treaties in a particular case [12].

The authors proposed as well that none of the proposed circumstances can be precisely established for smart contracts. It's difficult to qualify a legal relationship, since a smart contract is not always a contract. In some cases, it's even more difficult to establish the personal law of a party due to the fact that the location of the connection node and the nationality of the subject do not always coincide. Therefore, there are problems of determining the applicable international acts [12]. Apparently, in such situations, the courts will need to establish the applicable law according to the most general principle of private international law, to apply the law of the country with which the relationship is most closely associated.

In general, when using smart contracts and when there is a need to choose the applicable law, you should use the traditional conflicts of laws adopted in the national legislation of the European Union states. However, such collisional bindings are not always enough. The court will have to use other methods of determining the applicable law, including by applying the law of the country with which the relationship is most closely associated.

### ***4.3. Smart contracts under the EU regulation***

At the supranational level, the European Union has separate acts regulating the use of smart contracts. Basically, these are directives regarding the conduct of various electronic money transactions (for example, Directive 2015/2366/EU of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market; Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and Regulation EU 600/2014 of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments).

There are no specific provisions that would establish the conflict of law regulation of relations when using smart contracts. Probably, there really is no such need. Smart contract is only a remedy by which the parties simplify their relationship. Specific regulation should in any case be carried out by general rules and regulations on contracts that actually arose from a smart contract (sale and purchase, lease, etc.). Regulation is carried out in accordance with the legislation of particular countries of the European Union. At the same time, regulation at the supranational level would be necessary for separate agreements (e.g., for cross-border real estate transactions). The special nature of such transactions is emphasized by the importance of real estate for the lives of individual citizens. Using a smart contract, participants try to protect themselves as much as possible, for example, when moving from one state to the other for permanent residence or when renting a room for tourist purposes. Accordingly, there is an intersection of economic and social policies and the operation of the norms of various branches of law (contract and business law, consumer protection, financial and tax law, customs law). Therefore, in order to streamline such relations at the level of the European Union, a directive could be created regarding the regulation of relations on the transfer of real estate using smart contracts.

What issues need to be resolved? First of all, questions of the form of the transaction. A common conflict-of-law rule is that the law of the country that applies to the transaction itself applies to determine the form of the transaction. However, in relation to smart contracts, it is difficult to establish the place of the transaction. In addition, the form of the smart contract is ambiguous. In various states, it is considered both as a type of written form, and as an independent form of transaction (for example, electronic). Particular difficulties of collisional legal regulation may arise when determining the fact of compliance with the form of the transaction in relation to certain specific objects. So, according to Russian law, a real estate purchase and sale agreement must be drawn up not just in writing, but also in the form of a single document signed by the parties. It is not clear whether such a smart contract is, therefore, at the moment, entities using a smart contract are advised to duplicate it in traditional writing in compliance with the rules established by the law of the place of the transaction.

There are hardly some theoretical difficulties in determining the personal law of an individual or legal entity who are a party to a transaction concluded using a smart contract. In practice, we have problems with the identification of subjects. Since often technologies that ensure the self-execution of contracts (for example, blockchain) guarantee the anonymity of their participants. There is no mandatory location of the parties in blockchain technology, which makes it impossible to apply the traditional rules for choosing the applicable law [13]. Thus, the application of the norms related to the determination of the personal status of a citizen is also complicated. To determine the law applicable to the contract, it is necessary to identify the party who carries

out the performance that is decisive for the content of the contract. In parallel with this, the problem of establishing the country arises. It is necessary to establish the place of consideration of the case, because the use of smart contracts can affect who is the plaintiff and who is the defendant in court [14].

There is an alternative option, which for practical purposes is more justified: to apply to the relations of the parties the right of the party registering the server and / or the law of the country of the technical specialist providing the use of the smart contract. At the moment, such an approach can be based on the rule that the law of the country with which the relationship is most closely connected can be applied to the relations of the parties. The agreement between the parties to the smart contract is more closely related to the law of the country of the server / specialist, even though the entity that owns the server is not a party to the contractual relationship.

As a clarification of this proposal in an international act or national law, the following conflict of laws can be directly established: the right of the country where the server is located; the right of the country of preferential implementation of the activity of a technical specialist personal law of an individual or legal entity that owns the server or provides technical support services for a smart contract.

Our conclusion is also justified by the fact that in most cases the parties to the relationship associated with the use of smart contracts will contact to specialists. Parties (especially if they do not use such technologies often and have little knowledge of them) will rely on technical support, in particular on data mining and calculation methods, to assist in finding a suitable contract proposal [15]. Therefore, the conflict of laws binding to the law of the country of the specialist looks logical.

Thus, at the supranational level in the European Union, special rules could be established for some of the most significant areas of use of smart contracts, for example, for real estate transactions.

## 5. CONCLUSION

Blockchain and smart contracts are becoming more and more popular in Europe. However, it is significant that scholars in continental Europe point out that economic expectations from smart contracts are often exaggerated [16]. Indeed, the use of smart contracts is associated with possible costs (financial and organizational, the need to contact specialists), as well as risks, including legal ones. At the same time, the importance of a smart contract can't be denied, as well as its practical use. Therefore, in the countries of the European Union, in which the smart contract is increasingly used to carry out cross-border transactions, it is necessary to systematize the legal regulation of these relations and make recommendations to improve the directives at the supranational level.

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