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INSURTECH AND PRIVATE INTERNATIONAL LAW CONSIDERATIONS

Abstract

Objectives: InsurTech is a new and interesting phenomenon, linked to the use of new technologies, such as artificial intelligence or distributed ledger technology, in the insurance sector. The factual and legal nature of relationships in this area, due to their heterogeneous and complex international character, raises many questions. Some of these relate to private international law, where conflict situations raise questions such as which law (the law of which state) is the substantive law applicable to resolve these situations. Presenting the complexity of this area, this statement describes possible solutions and reflects on the need and potential of applying private international law in the InsurTech sector. It introduces the InsurTech phenomenon, presents its links with private international law, reflects on the adaptability of existing mechanisms of this law to highly technological legal relations, and concludes by an attempt to indicate how to combine InsurTech and private international law, and whether this is possible at all.

Material and methods: The work was written using standard scientific methods for legal science. It is primarily a dogmatic work, but also reaches for comparative legal elements. This choice of methods is justified by the presented issues.

Results: The result of the research is an assessment as to the possible use of private international law tools for the problems that arise with InsurTech instruments.

Conclusions: The author points out that the currently known private international law instruments are not suited to the modern requirements of the insurance services sector, especially in the context of the use of artificial intelligence or DLT technology (blockchain, smart contract) in the sector.

Keywords: *InsurTech, AI, blockchain, smart contract, private international law, conflict-of-law*

1. Introduction

There is no doubt that recently the insurance market has been experiencing intense changes (Allam-Firley, 2021, p. 17 ff.). These concern both innovative products emerging on it and new services that were previously unknown (Frick & Barsan, 2020). It should come as no surprise that terms unfamiliar to many are also appearing in this area, such as InsurTech, a combination of 'insurance' and 'technology', the conceptual scope of which is not clear (Beenken & Noack,

2016). Combining the word 'tech' with other industries – in order to link them to the area of new technologies – has, moreover, been relatively popular recently, to mention only LegalTech, FinTech or RegTech, for example (Ebers & Navas, 2020). The combination of words specific to various industries with technology can and generally does mean that these industries have entered the world of technology in earnest, which is reflected in the transformation of some of their services and products from the analogue to the digital world (Szostek, 2019). The same is happening with the insurance market (Bruce et al., 2018).

The recently omnipresent artificial intelligence (Koulu & Kontiainen, 2019, passim) distributed ledger technologies, including blockchain (Yeung, 2019) or smart contract (Savelyev, 2017) have also arrived here. Such technologies can be used to automate transactions in the insurance sector at many stages, from identifying and verifying their customers, estimating risks, documenting the contracts concluded, exchanging information between the various participants in the sector, to the full automation of the process of reporting and settling claims and paying out compensation (Manes, 2021). The possible applications of new technologies in this area are numerous (Morin, Nohlen, & Steinmetz, 2022).

At the same time, the opportunities that arise in this area, at least from a legal point of view, also give rise to uncertainties, some of which have hitherto been absent or limited in this sector. Some of these problems concern the applicable law in this area, the connection of certain legal relationships in the insurance sector with the law of a particular country, especially in terms of substantive law (Audit, 2021). Indeed, the traditional connectors of a given legal relationship with national law are not necessarily the ones that will succeed when determining which law (the law of which country) is applicable to assess the rights and obligations of the parties to a legal relationship falling within the broad field of insurance, if that relationship is at the same time linked to InsurTech instruments (Campo Comba, 2021, passim)

For the above-mentioned reasons, it is worth reflecting on these problems and trying to look for the connecting factors between InsurTech and private international law, to consider the possible interdependencies between them, in order to identify those that will allow to identify the law to which the legal relationship related to InsurTech instruments should be subordinated. This purpose will be addressed in this contribution.

2. Brief overview of InsurTech

For further consideration it is necessary to briefly introduce the concept of InsurTech. Only the clarification of this concept may provide a starting point for research in the field of private international law, insofar as, after such an attempt to clarify the issue, it proves possible and necessary to do so.

To begin with, it must be stated again that the conceptual scope of the term InsurTech is not precise (Szpyt, 2022, p. 5). In the current normative state, there is basically no definition of this term. Significant discrepancies also exist in the legal doctrine. The development of various technological instruments, the lack of uniformity of practice or identical legislative solutions in individual countries, dictates that any definition of this phenomenon should be approached with caution (Marano & Noussia, 2020, passim). Despite the fact that recently it has become increasingly possible to speak of establishing the material and personal (subjective) scope of this concept, it is nevertheless necessary to make the far-reaching disclaimer (out of an abundance of caution) that the InsurTech phenomenon has not yet been properly studied and diagnosed (Landini & Noussia, 2023). A dynamic development of technological tools that can be used in the insurance industry is underway, and it is primarily with such phenomena that the concept is linked (Kammann, 2018, p. 100 ff). Thus, if one were to indicate what InsurTech is in the material sense, it would have to be defined as any manifestation of the use of technological innovations in the insurance sector aimed at improving existing processes, introducing savings or offering new products and services not yet present on the market (Marano, 2019). However, the term is also often used in a personal (subjective) sense, in which any entity providing the above-mentioned technological innovation should be understood (Ostertag, Morvan, Metzger, & Levy, 2022).

These introductory remarks already show that we are dealing with a specific phenomenon that escapes the traditional conceptual apparatus, which must cause and generally does cause various doubts. The different conceptual scopes, and thus the different understanding of the term InsurTech, cannot remain unimportant in the context of an attempt to agree on whether this phenomenon may be subject to the rules of private international law. This is because the latter generally only covers phenomena that are well known, typical, formed

in domestic relations, whose international aspects are a consequence of the cross-border use of domestic instruments (Bonomi & Wautelet, 2016, p. 27 ff). In principle, InsurTech has no such characteristics.

Undoubtedly, however, InsurTech is a phenomenon that has many features in common with legal relations governed by private international law. Firstly, it is generally cross-border in nature, not dependent on any national barriers. Secondly, the use of the benefits of technology in the insurance world is a type of social relationship that should be subject to legal regulation. Third, this interdependence of InsurTech and private international law seems to be confirmed where there is a temptation to exclude certain types of legal relationships from the assessment of national legislations (Ruhl, 2014). The insurance sector is, after all, typically a sector with a large number of legal regulations of a supervisory or policyholder-protective nature (Marano & Noussia, 2020, p. 3 ff). Also in such cases, public order (Sibony, 2020) as one of the values protected by private international law seems to be the element that must not be forgotten, especially in the sense that it should be the basis for the delimitation of possible legal conflicts. Indeed, the whole art of private international law consists in allowing for the identification of the national law most suitable to regulate the factual situation under consideration with the international element (Burman, 2009).

With this in mind, mention must be made of the most typical technologies that concern or will concern the insurance (InsurTech) sector in the future. According to the doctrine, these include in particular the already mentioned: artificial intelligence, distributed ledger technology, to include blockchain or smart contract. Against this background, it is questionable whether the model of identifying national law that is characteristic of private international law is adequate to the current phenomena emerging in this sector. This is because each of these technologies generates its own rules of operation, which, according to the well-known 'code is law' principle (Hassan & De Filippi, 2017) in the world of new technology law (Pouget, 2019, p. 35 ff), may lead to a rejection of the search for the applicable law understood as the law of a certain state to assess the rights and obligations of the parties to a legal relationship falling within the broad field of insurance.

Artificial intelligence in insurance is the type of new technology that is expected to be most important for the development of the insurance industry in the future (Chan, Hogaboam, & Cao, 2019). This term is generally used to describe so-called intelligent systems, i.e. systems that solve tasks at a sufficiently high level, the solution of which requires intelligence (Russel & Norvig, 2011, p. 3 ff.). It is not easy to define a precise class of these tasks, but a few relevant examples can be given: processing natural language appropriate to the situation, making accurate predictions on the basis of (changing) data, or correctly classifying a situation and indicating a justified decision (Aletras, Tsarapatsanis, Preotiuc-Pietro, & Lampos, 2016). Such systems have the ability to learn, understood as the ability to change the way the software functions as new data is received, in order to improve the resulting output (Medvedeva, Vols, & Wieling, 2020). At the same time, they are able to draw the right conclusions from the available data, also taking into account the changing context of reasoning, detect significant relationships in data sets, or make accurate predictions (including future events) (Mckamey, 2017). In the context of the insurance business, the following fields of application of artificial intelligence are indicated here, among others: development of existing products and creation of new products; insurance and reinsurance distribution; pricing (creation of insurance tariffs) and underwriting (estimation of insurance risks); contract management and customer service; claims settlement; asset and risk management and reporting processes; reinsurance; prevention and combating of insurance crime (Aletras et al., 2016). Each of these types of applications of technology is significantly different from how this area has worked so far. The use of the various tools in this field will take or already takes place on the Internet and involves a new form of data processing related to Big Data analytics. It is therefore a complex information system that operates primarily on the Internet, totally different from the existing one.

There are also particularly high expectations for distributed ledger technology (DLT) (Reyes, 2018). The spread of the Internet has sparked the development of new forms of information sharing, and now, in the data-sharing economy, it is mainly the blockchain technology that can become the foundation of the infrastructure for the direct exchange of value (Szostek, 2019, p. 17 ff). The analyses carried out so far indicate the potential to increase the

credibility of insurance sector entities and their products by using a transparent blockchain infrastructure, increasing and facilitating access to insurance products, automating insurance processes related to payments and information exchange between insurers and reinsurers, automating claims processes and increasing the detection of insurance fraud (Szpyt, 2022, p. 62).

From the perspective of the legal system, blockchain is both a code, i.e. a communication protocol, and a public registry in which all transactions performed between network participants are recorded sequentially with a high degree of transparency, in a form that cannot be easily changed (Yeung, 2019, p. 207 ff). As a result, blockchain technology is a technology that fosters user trust, as it enables on-line information to be shared, transactions to be made and recorded in a verifiable, secure and durable manner (Savelyev, 2017, pp. 2–5). Blockchain essentially runs on software that is open, unclassified and accessible to anyone interested. Each constituent block of a blockchain contains a record of the previous transaction and the data of the new transaction encoded in an individual hash that corresponds to the data stored in the block and allows the hash of the previous block to be determined. Each hash, which is a sequence of numbers and letters, acts as a block name, individualising and identifying it in the blockchain. The use of cryptographic hash functions and the creation of copies of the chain across all nodes in the network ensures a high level of security and integrity of the data stored in the blockchain (Tatar, Gokce, & Nussbaum, 2020, p. 2 ff). Verification of transactions, i.e. confirmation that all data is correct, is performed by network users with the appropriate software and computer power, connected via the Internet. In this way, it is possible to exchange, for example, virtual currency. Also other cryptoassets, such as tokens, can be transacted on blockchains (Szostek, 2019, p. 54 ff). Usually these types of assets (tokens) are offered in connection with particular smart contracts (Idelberger, 2018). A token may represent an economic value, such as a share in the profit of a venture, it may give entitlement to use software, to a digital service, or it may give the right to participate in the governance of an entity through voting rights in specific cases (Knieper, 2019).

The success of blockchain technology is inextricably linked to the smart contract (Finck, 2019, p. 1 ff). This is because blockchain originated as a register of transactions involving cryptocurrencies, which were made using

smart contracts (Savelyev, 2017, p. 4 ff). A smart contract is an algorithm, or in other words a computer programme, that enables a specific transaction to be carried out in an automated manner (Finck, 2019, p. 1 ff). The new element is advanced cryptography and the ability to store it on the blockchain. The automated process of contract formation and execution via smart contract on the blockchain has a number of advantages over traditional contracts. Transactions involving the transfer of cryptoassets are carried out in a P2P (peer-to-peer) network using the smart contract and do not require an institutional intermediary. The distributed ledger technology (DLT) used for this purpose is a way of storing information via a duplicated digital copy of the data available in multiple locations, updated in real time using a sophisticated cryptographic system. Blockchain and smart contract can be used in the process of automating transactions in the insurance sector at many stages, starting with the identification and verification of its customers, the estimation of risks, the documentation of concluded contracts, the exchange of information between the various participants in the sector, and ending with the full automation of the process of reporting and settlement of a claim and the payment of compensation (Szpyt, 2022, p. 77 ff).

Thus, also in this case, the use of new technologies in the insurance sector is significantly transforming the sector by introducing hitherto unknown mechanisms, automating, among other things, the protection provided by the insurance contract concluded. Naturally, InsurTech also includes other technologies, the application of which must be considered on a case-by-case basis, including with regard to their potential for confrontation with private international law.

The above shows that with the development of InsurTech, the insurance industry has undergone and will continue to undergo significant transformations. The way it has operated to date is changing significantly, and new opportunities and challenges are emerging (Neale, Drake, & Konstantopoulos, 2020). Technological boons are moving the insurance industry into the digital world, which can also be a significant challenge from a private international law perspective.

3. InsurTech's link to private international law

The legal implications of the application of artificial intelligence algorithms and distributed ledger technology in the insurance sector, given the far-reaching cross-border possibilities of the sector as a result of the application of new technologies, need to be assessed on the surface of private international law (Blondeau, 2021, p. 53 ff). This surface is a set of norms whose function is to indicate the legal system (of one's own or of a foreign state) applicable to the legal assessment of a specific civil law situation (in the present case InsurTech). The norms of private international law finally resolve conflicts against the background of factual connections with the legal systems of different states – hence their name – the conflict-of-laws norms (Krebs, 2019, p. 10 ff). In turn, many such conflicts, due to the application of InsurTech in practice, can be imagined.

It should be recalled that in regulating the applicable law, modern private international law uses the method of designation, guided by the rules of conflict-of-laws. It is a matter of finding the applicable law in a given state of facts. In private international law, one does not generally analyse a given problem abstractly in isolation from a specific situation. What is required is a search for connections according to the relevance of the relationship to the legal system in question. The task of private international law is to direct the facts to the appropriate legal system, where a legal solution should be found. The indication of the law is not only based on the principle of the closest connection, but it also takes into account certain conflict-of-laws interests, especially the interests of the legal order in question, above all legal certainty (Lando, 1984, p. 237 ff).

In determining the applicable law the so-called connecting factors are used (Basedow, Rühl, Ferrari, & de Miguel Asensio, 2017, pp. 442–452). A connecting factor is a criterion by which the law applicable to a given legal relationship is identified. The identification takes place by a fact (simple or complex) described in the conflict rule, which expresses the relationship between the case and a state and its law. Connecting facts vary in nature, depending, *inter alia*, on whether they are based on circumstances concerning a person or another element of the case for which the applicable law is being determined. That is why a distinction is made between personal connecting factors (relating

to persons), and other factors to include territorial factors. Usually private international law uses one of the typical connecting factors: the place of the tort or the damage, the place of the performance of the contract, the location of the property, the nationality, the domicile or the habitual residence of a person, of a contractor, of the mother, of her child, etc. Of all the national laws presenting a connection to a given situation, the identification is made by identifying the one which would be most appropriate to regulate the situation in question. Indeed, the mechanism of the conflict-of-laws rule makes it possible to link an international situation or an international legal relationship to a specific national law, which will be considered appropriate and will attribute to it its legal regime (Batiffol, 1966, pp. 159–163).

Against such a background, it is important to note, when analysing the wording of the various private international law instruments, that there is in principle no reference to InsurTech problems directly in their content. It is therefore necessary to undertake appropriate qualification efforts to define the concepts defining the scope of a given conflict-of-laws rule in order to subordinate InsurTech regimes to it.

Perhaps what deepens the doubts is the heterogeneous nature of InsurTech solutions. These have to be assessed on a case-by-case basis, paying attention to the nature of the specific solution and the related possibilities of interfacing with private international law.

It may be noted here that InsurTech solutions based on artificial intelligence generate a number of doubts, such as whether, from a functional point of view appropriate to private international law, artificial intelligence can be characterised as a legally independent and autonomous creation with a will of its own that exists as such in external relations, including whether one can speak of externally recognisable organisational autonomy in such a case. Such a qualification would allow, for example, an attempt to identify a so-called personal statute for InsurTech solutions based on artificial intelligence. This statute would then be subject to, among other things, the question of the artificial intelligence's association to a particular state, which would be linked to the existence of certain bonds of the artificial intelligence to the state in question. This would somewhat ease the question of the private international law qualification of InsurTech solutions based on artificial intelligence. In this case,

on the other hand, it is impossible, one would think, to look for a connecting factor, other than a personal one, for the connection of artificial intelligence to the law of a given state. Territorial connectors seem to be unreliable here. This is because these are usually extraterritorial solutions. However, the specific design of a given InsurTech solution may lead to different conclusions.

In contrast, the issue related to the use of distributed registry technologies, including those based on blockchain technology and smart contracts, within InsurTech tools is somewhat more complex. This is because, first of all, it is difficult in this respect to speak of any place of a given activity involving blockchain and, therefore, its possible territorial assignment. Blockchain transactions simultaneously take place everywhere and nowhere. The nature of this technology also implies the absence of some kind of central registry operator, which would allow, for example, the use of some kind of personal connecting factor. A solution would seem to be, for example, the choice of applicable law agreed between each participant in the blockchain, which, however, requires the consent of each party (blockchain participants). This, in turn, does not seem to be easy to achieve, after all, blockchain participants are generally individuals from many different countries. Undoubtedly, the use of the particular technologies referred to the above seems to be able to present linkages to multiple national legal systems, e.g. all national rights of all users of a particular blockchain (Audit, 2021, p. 672 ff). In turn, this seems to be one of the arguments for further exploration of this area.

However, the matter is highly complicated. One may therefore wonder whether the current private international law mechanisms are capable of fulfilling their role in the context of collisions foreseeable in connection with the cross-border use of InsurTech instruments. In other words, whether the known private international law mechanisms are adapted to the various uses of InsurTech, a subject matter of an eminently specific nature, significantly different from the typical situations for which the original private international law mechanisms were created (Guillaume, 2019). Let's take a look at it now.

4. Adaptability of InsurTech to the existing private international law

In this context, it should be noted that, in general, private international law governs conflict of applicable laws as to factual relations governed by national laws. Meanwhile, InsurTech, the individual new technologies that are possible in the insurance sector, have in principle not yet even lived up to the rudiments of domestic regulation (national laws). Their complex subject matter and essentially extraterritorial nature may be one reason for this. In general, however, only phenomena known to national laws should be confronted with private international law and become the subject of conflict-of-laws rules. If, for example, the rules of private international law aim to determine the applicable law and jurisdiction in contractual matters, they are based on the concept of contract developed by civil laws (domestic law). It follows from this that private international law rules are based on national laws. In contrast, the InsurTech sector lacks such regulations. The use of InsurTech tools is not actually based on regulations issued by the states, but usually on the relevant software (Marano & Noussia, 2020, p. passim).

Furthermore, according to some, artificial intelligence or distributed ledger systems – such as blockchain – should themselves be considered a form of legal order, as they are based on operational principles that have been introduced by a code – a programming language. The operation of such systems is ultimately based on the rules established by the code, and individuals using these systems are forced to comply with the rules that have been established by the code. In essence, they are self-sustaining and self-regulating systems. In many respects, therefore, it appears that such systems are phenomena remarkably similar or akin to those with which legal theory associates the concept of a legal system. According to the 'code is law' paradigm, it could therefore be considered pointless to search for the applicable national law in this area (Lessig, 1999, p. 3 ff; Szostek, 2019, p. 34 ff).

There is at least one precedent in this area. In July 2016, a user of the blockchain – the first attempt to create a decentralised, autonomous organisation called *The DAO* – identified a vulnerability in the code forming this blockchain, which he exploited to extract the equivalent sum in cryptocurrencies of around

$70 million. This was not a criminal act (in the traditional sense), but the use of the gap left by programmers when writing the code. In fact, within the blockchain, the same sum could be requested several times. The codemakers did not take into account the possibility of a recursive call and the fact that the system was sending the funds first before updating the balance. It is worth noting, however, that in the face of what could have been considered misappropriation, a debate arose between the users of this blockchain about the validity of the 'code is law' principle, in which it was discussed whether this user, following the code while ignoring the spirit of the project, should be penalised. Ultimately, a vote was held to decide whether the code should be modified to close the gap that had caused the funds to be transferred. The response was positive, and eventually also the funds were returned (Audit, 2021, p. 687).

This case is instructive for at least two reasons. Firstly, it is surprising that the participants in this blockchain thought about the mandatory scope of the code for them, even if its use was against the spirit of the project. Secondly, it is also striking how something like a dispute was resolved, which ultimately went through a democratic vote of the participants (Audit, 2021). All of this took place on an autonomous basis, without reference to any system of national law, without the involvement of the national or international judiciary. The autonomy of InsurTech systems can therefore be an argument for not having to search for the applicable law understood as the law of a particular state. In turn, this could be a step towards a fully autonomous InsurTech system, with its own jurisdiction. Such examples, within the operation of some blockchains in other sectors (e.g. the financial sector) already exist (Aouidef, Ast, & Deffains, 2021), some others are in the preparation process of using blockchain technology to create a virtual court for all disputes arising from blockchain-based intangible assets, such as crypto-currencies, smart contracts, etc.

The purpose of such solutions is to allow them to operate outside the scope of national law and the jurisdiction of state courts (Metzger, 2018). If such a concept were to become the basis for the operation of InsurTech systems, which, after all, is not yet a foregone conclusion and requires, one would think, further discussion, consideration of the application of private international law mechanisms in this sector would have to cease at this point.

However, a counter-argument to this position may seem justified, according to which the application of legal mechanisms (private international law) to InsurTech should act as a legal policy to prevent the development of a digital world independent of national legal orders, which, especially in the insurance sector, where the issue of state supervision of the conduct of insurance business is important, should play a significant role. InsurTech's complete independence from state power therefore seems undesirable. It is therefore necessary to create a link between national law and national courts, on the one hand, and new technologies within InsurTech, on the other, involving the identification of national law and state jurisdiction in the event of a dispute involving InsurTech. This is how, among other things, the idea of public order present in private international law should be understood (Kosters, 1920).

The effects of InsurTech transactions, especially those that are or will be carried out using blockchain or smart contract should have an effect in substantive law. It should, however, be a matter for individual substantive law regulations to decide to what extent InsurTech transactions carried out in this manner should be limited/defined by law. The individual states should determine the legal scope of InsurTech transactions, for example, deciding whether a smart contract should be recognized as having legal scope independent of the base contract, or on the contrary, should it be considered merely as means of executing the base contact. In this respect, the answers may vary and this is one of the issues to be determined in substantive law. The use of blockchain and smart contracts in practice will also raise in this respect the questions outlined above and linked to private international law: with which legal order is the blockchain and the smart contract connected (Guillaume, 2019, p. 59)?

As a result, the applicability of private international law should be sought in the InsurTech sector, as private international law mechanisms are useful in this sector. However, this does not mean that current private international law mechanisms are adapted to InsurTech. This is an object of an eminently particular nature, and very different from the types of situations or social relations for which the mechanisms of private international law were originally designed. Nevertheless, there seems to be a legitimate need to link InsurTech to private international law and adapt the latter. However, this looks like a very complicated process (for the future).

5. Regulatory efforts connecting private international law and InsurTech

The observations made so far show that the issue of InsurTech is not a typical focus of private international law. Concepts of the area to date do not fit very well with the new subject of transnational legal relations. This area contains many dilemmas that need to be resolved.

To illustrate one of the examples of regulatory problems of this area, the European Commission's initiative on *Conflict of laws regarding securities and claims* shall be mentioned. In terms of these types of financial transactions, the blockchain technology was considered. However, given the difficulty of making it coexist with the science of conflict-of-laws, part of the working group established to work on these issues preferred to leave this question aside (Audit, 2021, p. 677). It was clearly considered too complex. The same can be seen within InsurTech tools, also largely based on this technology. As already pointed out, if this difficulty in transposing conflict-of-laws techniques to blockchain has been identified, it is because there are in fact two characteristics of this technology that make it rather resistant to these same techniques. The first of these is that blockchain is entirely immaterial; it has no physical existence, so that its attachment to a given national territory is rendered eminently complex. In addition, blockchain is also decentralised, i.e. it cannot be embodied by a particular entity or authority located – again – on the territory of a state (Audit, 2021, p. 678). These two characteristics – immateriality and decentralisation – are likely to be obstacles to determining the law applicable to the various applications of blockchain, also in the InsurTech sector (Frick & Barsan, 2020, p. 56 ff). The reason is that conflict of laws rules seek to link a legal situation – e.g. a contract – with international elements to the law of the host country. This is because conflict-of-law rules focus on linking a legal situation – e.g. a contract – with international elements to a particular national legal system. To this end, private international law, has used usually territorial or personal connecting links: e.g. the place of performance of the contract, the nationality, the domicile or the habitual residence of a contractor, etc.(Audit, 2021, p. 678). On the implications of using particular InsurTech technologies, it is no longer so clear.

Maybe this is the reason why currently solutions treating InsurTech, including in terms of private international law, are rare in national legal orders. For this reason, it is worth noting one of the attempts to regulate this matter. It was made in the Principality of Monaco, through a law on the law applicable to blockchain, which would clearly apply to InsurTech based on this technology. There, the National Council, has adopted the law on blockchain on 21 December 2017 (*Proposition de loi n° 237 relative à la blockchain*. This bill has been transformed into: *Proposition de loi n°995 relative à la technologie blockchain, enacted as Loi n°1528 du 7 juillet 2022 portant modification de diverses dispositions en matière de numérique et réglementation des activités des prestataires de services sur actifs numériques ou sur crypto-actifs*, available at https://www.conseil-ational.mc/). Article 5 of this law states that 'Monegasque law is applicable to blockchains, smart contracts, algorithmic processes and cryptocurrencies that produce effects on the territory of the Principality of Monaco. The effect is deemed to occur in the territory of the Principality of Monaco when one of its constitutive events or one of its consequences has taken place in that territory'.

In this respect, it is important to note that the link to Monegasque law would be any effect of the blockchain in the territory of the Principality of Monaco. The criterion used here, therefore, is to produce effects in the specific market affected by the blockchain. The purpose of this solution is, as one may think, to develop a new sector of activity in the Principality of Monaco by inviting economic operators to use this technology on its territory, which may also be the result of the application of certain provisions of private international law (Audit, 2021, p. 680). However, the very connecting factor used in the law there is extremely broad. In fact, it makes it possible to almost always link blockchain to the local law.

Although in the legal doctrine of private international law the above proposal is unlikely to be recognised, it is to be expected that this is the beginning of a future regulation of this area in other national orders as well. Such regulation in the insurance sector is to be expected when InsurTech tools are used on a large scale, which will become a source of various concerns. Indeed, it is impossible not to notice the interests that arise in the practice of the application of insurance law, especially in the context of the impact on consumer law, including in European Union countries.

The lack of such regulations exposes the InsurTech marker participants to a wide range of economic and legal risks. The implications of InsurTech transactions, i.e. using a range of high-tech tools in the insurance sector, lie outside the traditional issues of this area. Here, the legal problems that have hitherto accompanied the conclusion of insurance contracts and their execution enter the virtual world, which is, unfortunately, literally governed by its own rules. The lack of national regulations creates risks for the parties involved, especially the weaker parties and thus, above all, the insured. The effects of individual transactions within the framework of blockchain technology or with the use of smart contracts give rise to new risks, which above all need to be regulated by national law. Only afterwards should private international law be thought of, especially as the InsurTech sector begins to reach out more and more boldly into the transnational area.

Currently, despite the lack of relevant national legislation, problems and disputes, including transnational ones, in the InsurTech sector are and will continue to arise. Perhaps, therefore, the creation of a private international law mechanism will be a kind of remedy, or a stimulus for future national law regulations. However, the issue is extremely complicated (Guillaume, 2019, p. 57).

For these reasons, the identification of the applicable law in InsurTech relationships appears to be crucial. In this respect, it will be necessary to make a legal qualification of the legal relationship in question, most often based on the concept of contract or tort (as this is the area in which InsurTech legal relationships most often occur) and to link the relationship in question to national law by means of one of the connecting factors. This does not mean that the connecting factors developed in this way will prove sufficient, especially in the world of blockchain and smart contract. It should also be mentioned that the observation of InsurTech practice to date shows that one of the connecting factors used in this area may be the parties' choice of law. Such a choice of law is often made by the parties in a given InsurTech instrument. If, on the other hand, such a choice does not occur, only then it will be necessary to rely on the conflict of laws rules applicable in the absence of a choice. Choice of law is therefore also a way to solve many problems in the presented area.

6. In search of the law applicable to InsurTech

The observations made so far suggest that InsurTech tools are transnational in nature, capable of solving many of the insurance sector's problems, while generating new problems, albeit of a different kind than before. The link between InsurTech and private international law is, on the one hand, natural. On the other hand, the existing rules of private international law are not able to adequately resolve conflicts as to the applicable law that may arise in practice from the application of InsurTech tools. So what will happen next?

Looking at Insurtech tools, based on artificial intelligence, blockchain and smart contract, one can see that InsurTech relies on Internet in many aspects. In this respect, it therefore makes one wonder whether the private international law tools emerging in connection with the functioning of the Internet could be suitable here as well.

In spite of concepts such as the *lex electronica*, which tend towards an autonomous legal order for the on-line environment, and which have already been rejected in principle above, there are above all statements to the effect that current private international law is not precise on this issue either. It is assumed that cross-border insurance contracts concluded on-line need special treatment under private international law. However this aim is not satisfied on a global level, as only EU regulations, to mention Rome I, distinguish insurance contracts, providing for special rules in this respect. This state of the legislation may lead to undesired results, including contradictory court verdicts (Malinowska, 2016, p. 336).

With regard to the application of the law applicable to legal transactions carried out via Internet, it should be pointed out at this point that usually – in cases analogous to insurance cases, i.e. based primarily on civil liability – five connecting factors apply: domicile, establishment, place of the causative event, place of damage or place of performance of the contract. Each of these connecting factors appears to be of little use in solving InsurTech problems, if only because it can create a chain of endless complications. For this reason, it is proposed, among other things, to counteract the aforementioned proliferation of such links and the often ensuing applicable law by using connecting factors

that allow for a form of concentration. The most prominent examples are the location of the server, the claimant's centre of interest, the location to which the information society service is directed (targeting) and the country from which the service is provided (country of orgin) (Lutzi, 2017).

Interesting solutions related to applicable law arise in the area of intellectual property law and its relation to the Internet, where immaterial goods are the subject of protection. Of course, it is not possible to present all possibilities here, but at least one inspired by ECJ case law on the material scope of several IP law instruments appears to be interesting (Depreeuw & Hubin, 2014). The issue at stake here is targeting, a phenomenon that embodies the idea that most on-line activity is not actually aimed at a worldwide audience, but is merely the most effective way of reaching certain audiences or pursuing certain business models. It is therefore argued that Internet Service Providers should not be subject to the jurisdiction of the courts or the substantive law of every country in which their on-line content is available, but only to the legal systems of those countries to which they have actively targeted their activities (Lutzi, 2017, p. 697 ff). This might be also tempting as a signpost for the international dimension of InsurTech problems.

These types of solutions, however rather postulative today, are not necessarily all sufficient to solve private international law problems concerning InsurTech. Nevertheless, it is the connecting factor referred to as targeting that seems to be an interesting proposal, allowing for a broader use in this area in the future, for which, of course, a change in the law is needed. Above all, it is likely that the problematic use of InsurTech instruments will particularly concern the insured-insurer relationship. Thus, it is the solutions addressed to the specific insured individual that will be the axis of disputes that may arise in practice. The principles of private international law will have to be respected in this regard, in those aiming at protecting the weaker party.

This idea seems to be justified, at least from the European point of view, and seems to be in line with the e-Commerce Directive (recipient of a service), Art 6(1) of Rome I Regulation (contract concluded by a natural person for a purpose which can be regarded as being outside his trade or profession), and the high level of protection of the fundamental rights of EU citizens in EU private international law (Lutzi, 2017, p. 697 ff). This seems to be the

right way forward in the area of InsurTech law, although certainly not the only one. However, for this to be put into practice, some anticipatory steps are needed, including those that clarify or limit the conceptual scope of the term InsurTech.

7. Some conclusions

A reflection on private international law from the perspective of InsurTech tools is needed and flows from practice. However, given the heterogeneous nature of InsurTech tools, the complexity of the matter, the lack of regulation in domestic law and the few attempts to regulate the phenomenon within the framework of private international law, it is difficult to take a clear position on the identification of a specific law applicable to the resolution of cross-border cases with an InsurTech element.

The attempt to establish a general statute for InsurTech seems to be doomed from the outset, as legal events related to artificial intelligence algorithms, distributed ledger technology, blockchain or smart contracts are characterised by considerable complexity. Nothing can be legalised or outlawed by means of conflict-of-laws rules, including prejudging the legal effects of the use of artificial intelligence algorithms or the operation of blockchain in the field of insurance.

The future practice of this sector must force solutions that will civilise the sector. Until then, the lack of uniform mechanisms in the various countries will create great economic and legal risks for the parties, which must be minimised. Legal developments in this area are inevitable.

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