

2. Does blockchain fit into current legal frameworks?

The decentralized nature of blockchains can imply some legal uncertainties

Blockchain, as a technology, cannot be regulated: only activities performed using the technology can. However, there are a number of transversal regulatory challenges that, regardless of the specific use case, are going to be present and that will have to be addressed to ease its adoption.

Main regulatory challenges facing blockchain

The immaturity of blockchain-based initiatives and the piloting phase of identified use cases means that specific **regulation of blockchain activities in the financial services industry is still non-existent**. Some current regulations will apply to blockchain-based services: for instance, smart contracts on the blockchain will at least have to comply with regulation on contracts applicable in every jurisdiction. Then, depending on the financial services offered on the blockchain (payments, lending, investment, etc.), regulation will have to be applied to these services. However, when looking at the big picture in blockchain, there are a number of **broad regulatory challenges** that will have to be addressed at some point in the future.

A more detailed analysis of these challenges can be found in BBVA Research's Working Paper ["Blockchain in Financial Services: Regulatory landscape and future challenges for its commercial application."](#)

- 1. Inclusion of payments and international transfers service providers using blockchain technologies in KYC, AML / CFT regulations** in order to ensure a level playing field and control potential illicit uses of cryptocurrencies. Exchange platforms and custodian wallet providers were already proposed for inclusion in the 4th European AML Directive on July 2016.
- 2. Legal framework regarding the nature of blockchains and distributed ledgers.** Distributed ledgers are not tied to a specific location. In terms of jurisdiction and applicable law, territoriality is an issue because every node of the network may be subject to different law, and there is no "central party" whose nationality could serve as an "anchor" for regulation. Similarly, liability is also a concern, because there may not be a party who is ultimately responsible for the functioning of the ledger. Nevertheless, in the case of "federated" ledgers it would depend on whether the ledger itself had any kind of underlying legal entity or not.
- 3. Legal framework for the recognition of blockchains as single sources of truth.** Although there is wide consensus about the immutability of information in a well-defined blockchain, there is still a lack of legal recognition of this immutability, preventing it from being used so far as an argument in front of any courtroom yet. A related issue is the storage of identity information in a blockchain. The use of blockchains as "single sources of trusted identity" is the ultimate goal of many players and a definitive step towards a "universal digital identity", but the recognition of blockchains as immutable sources of truth is a pre-requisite.

4. **Regulation on how the “right to be forgotten” shall be interpreted.** The immutability of the blockchain might collide with the “right to be forgotten” recognized by some data protection regulations, as it is the case in Europe ¹⁴. A potential solution to reconcile both could be to substitute “deletion” by “impossibility of use” of personal information by third parties. This could be achieved with automatic encryption of information when certain conditions are met (a smart contract could be involved) or alternative solutions to prevent access to that information.
5. **Legal framework on the validity of documents stored in the blockchain as a proof of possession or existence.** On top of the recognition of the blockchain as a single source of truth, there is a second level of recognition needed for certain businesses: that a document stored in the blockchain representing the ownership or existence of an asset really proves such ownership or existence. If the process of verifying the veracity of the document prior to its inclusion in the blockchain were robust enough, the recognition of the blockchain as an immutable source of trust would imply recognition of the document as proof of existence or ownership. Again, there is no court in the world accepting this yet.
6. **Legal framework on the validity of financial instruments issued on the blockchain.** When using the blockchain as a platform to define “native” financial instruments, such as bonds or derivatives, the recognition of the legal validity of these financial instruments by the corresponding regulators and supervisors is needed. The ultimate case would be, of course, money. Native money issued on a blockchain could have a huge impact that goes beyond the limits of this article.
7. **Legal framework for smart contracts.** Territoriality and liability issues are also applicable to smart contracts. Regarding jurisdiction, not only does the ledger itself has no specific location, but contracting parties can be subject to different laws in their countries as well. Regarding liabilities, multiple parties may be involved in smart contracts: the contracting parties, the contract creator (usually a coder) and a contract custodian. Apart from the obvious possibility of contracting parties not fulfilling the contract, there is a chance of the contract itself working badly, because of mistakes in coding or defects in design: who would be liable in that case?
8. **Legal framework for information in blockchains from the perspective of cross-border flow of data and data protection.** The distributed shared nature of blockchains has direct implications on stored data. Although in public blockchains information is accessible to all the nodes of the network, in “federated” ledgers the “slices” of information accessible to each participant must be carefully managed. Also, as already mentioned, there is also a territoriality issue that affects data. Information in the ledger is decentralized so there is an inherent cross-border data flow that may violate existing regulations.
9. **Legal framework regarding the use of the blockchain as a valid ruling register for the Internet of Things (IoT).** Since in the IoT realm everything has an identity, it would be useful to have a common shared register to store things’ “identity” and information, and to allow transactions between them. This idea of one or many interrelated “director ledgers” for the IoT is barely nascent and will not be operational in the short term. However, it will require a legal framework in which these director ledgers are recognized as valid ruling registers for the IoT. All the previously mentioned issues of territoriality, liability and enforceability of smart contracts are of course applicable to this case.

14: Any European citizen has the right to have their personal information deleted from second parties' electronic or paper records or databases.

10. **Definition of regulatory reporting standards on the blockchain.** Recent research about RegTech¹⁵ shows that blockchains can be useful tools in this field. Having all the transaction information in a shared ledger in almost real time could allow regulators/supervisors to monitor financial activity without waiting for required reports from financial institutions. However, standards are needed on the kind and format of transaction data that have to be stored in the ledger(s) so regulators can easily extract the information. And, most importantly, data to which each regulator/supervisor should have access to must be clearly defined.
11. **Definition of regulatory sandboxes**¹⁶ in order to test these technologies, including criteria for blockchain projects to enter the sandbox, limit of scale of the activities carried out within the sandbox, authorisation process rules and requirements, waivers or modifications to particular rules if testing activities would breach them, alignment of the sandbox rules to current legislation, and proper consumer safeguards.

Conclusion

Blockchain technology is being increasingly considered as a potential game-changer for financial services. However, to take the next step towards its commercial development, there are legal uncertainties that must be clarified. Some of these uncertainties have to do with fundamental concepts of law, and imply the need for a deep reflection about the meaning of some established ideas in a decentralized digital world.

15: Technologies applied to the addressing of regulatory requirements.

16: Controlled environments in which firms can test innovative solutions with real customers without immediately incurring the entire normal regulatory burden.

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