Seminar Civil Law and Computer Science
Distributed Trust in Finance

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Topic description

Legal and Technical Aspects of Ripple

Ripple (XRP, https://ripple.com) is one of the oldest cryptocurrencies and has been ranked by market capitalization among the top 10 for a long time. Many blockchain enthusiasts criticize Ripple for its consensus protocol, which they claim is permissioned (as opposed to permissionless like the proof-of-work used by Bitcoin, for instance). Moreover, some shortcomings have been identified in the protocol even in a permissioned model. In December 2020, the US Securities and Exchange Commission (SEC) sued some of the executives of Ripple, alleging they raised more than one billion USD through a digital-asset securities offering that is not registered, as required by the appropriate law (as determined, say, by the "Howey Test"). In Switzerland, primary capital markets are traditionally regulated in a distinct way where emphasis is placed on the documentation accompanying the emission (c.f. FINMA ICO Guidelines and Supplement to ICO Guidelines).

1. Computer Science Task

Describe the Ripple consensus mechanism (at a high level only):

- Explore the source code of the Ripple validator and describe key elements of the transaction-validation methods. How are new coins created? Who holds the power to do this?
- We run a Ripple validator at the University of Bern, to which we will give you access. Describe technical and organizational measures that are to be taken for running a Ripple validator.

2. Law Task

Assess the legal situation of a cryptocurrency like Ripple under Swiss law:

- Discuss the offering's implications under FINMA rules
- What are the regulatory implications of the Ripple offering and subsequent trading under Swiss law?
- What are the AML/CTF implications for issuing and trading Ripple under Swiss law?

Materials/Literature

AMORES-SESAR IGNACIO/CACHIN CHRISTIAN/MICIC JOVANA, Security Analysis of Ripple Consensus, OPODIS 2020, January 2021, available under: <https://doi.org/10.4230/LIPIcs.OPODIS. 2020.10>.

CHRISTODOULOU KLITOS/IOSIF ELIAS/INGLEZAKIS ANTONIOS/THEMISTOCLEOUS MARINOS, Consensus Crash Testing: Exploring Ripple's Decentralization Degree in Adversarial Environments, in: Future Internet 2020, 12, 53, available under: <https://doi.org/10.3390/fi12030053>.

DI LUZIO ADRIANO/MEI ALESSANDRO/STEFA JULINDA, Consensus Robustness and Transaction De-Anonymization in the Ripple Currency Exchange System, ICDCS 2017, p. 140-150, 2017, available under: <https://doi.org/10.1109/ICDCS.2017.52>.

IFFLAND JACQUES/LÄSER ALESSANDRA, Die Tokenisierung von Effekten, in: GesKR 2018, p. 415-423, available under: <https://www.swisslex.ch/de/doc/essay/4107a826-3951-48a9-9c35-f2db45b28411>.

ROBERTS JEFF JOHN, SEC vs Ripple: Inside the Case That Could Make or Break the Crypto Industry, An investigation into the SEC v Ripple case shows how both parties have a lot to lose, Decrypt.co, August 2021, available under: <https://decrypt.co/78153/ripple-inside-the-sec-case-that-could-make-or-break-the-crypto-industry>.

SWISS FINANCIAL MARKET SUPERVISORY AUTHORITY FINMA, Guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICOs), 16 February 2018, available under: <https://www.finma.ch/en/~/media/finma/dokumente/dokumentencenter/myfinma/1bewilligung/fintech/wegleitung-ico.pdf?la=en>.

SWISS FINANCIAL MARKET SUPERVISORY AUTHORITY FINMA, Supplement to the guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICOs), 11 September 2019, available under: <https://www.finma.ch/en/~/media/finma/dokumente/dokumentencenter/myfinma/1bewilligung/fintech/wegleitung-stable-coins.pdf?la=en>.

VON JEINSEN ALEXANDER, Kapitalmarkt – Recht und Transaktion XIV, IPO vs. ICO, Zürich 2019, p. 33-55, available under: <https://www.swisslex.ch/de/doc/bookdoc/6b51bff5-b843-4c0a-b068-10932ab89c2c/search/151178324>.