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Autonomous Ships: Challenges to Contemporary Maritime Law

*James Zhengliang Hu**
*Wenwen Li***

ABSTRACT

Traditional maritime law regimes are framed based upon three primary elements, i.e. ship, master and other crewmembers, and shipping company (shipowner, operator and manager). Autonomous ships or Maritime Autonomous Surface Ships (MASS) as defined and classified by IMO will change these elements. Especially, intelligent network system and other AI technology together with other advanced technology will gradually be applied in ship's equipment, navigation and operation. The roles crewmembers onboard a ship will be replaced by the shore-based operators generally in the cases of MASS of L2 and completely in the cases of L3. Predictably, these characteristics will pose significant challenges to the legal regimes of contemporary public and private maritime law including but not limited to those pertaining to the crewmembers, carriage of goods or passengers by sea, collisions at sea and marine insurance, in order to be adaptive to the characteristics of autonomous ships. In particular, the scope of ship seaworthiness needs be extended to both hardware and software and shipping company's obligations to make a ship seaworthy and maintain seaworthiness need be modified especially to ensure the availability and workability of intelligent network systems. The legal functions of the crewmembers will be modified in the cases of MASS of L2 and the legal status of the shore-based operators need be clarified in the cases of MASS of L2 and L3. Where the prevailing regimes or rules of maritime law may be applied to autonomous ships through appropriate interpretation, it is not advisable to establish new regimes or rules.

KEYWORDS: Autonomous Ship; Maritime law; Impact; Shore-based Operator; MASS

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I. Introduction

The shipping industry is facing shortage of seafarers and increased costs of employing seafarers. Meanwhile, AI technology and other advanced technology has become practicable to be gradually applied in ships' equipment, navigation and operation. These two main elements are driving the transformation of ships towards intelligence. Autonomous ships have gradually evolved from navigation and management by the crewmembers onboard to remote control by the shore-based operators while the crewmembers conduct auxiliary navigation and management onboard, and further to a complete level of such remote control, and ultimately to fully automatic ships. Compared with traditional ships, autonomous ships can reduce the risk of human errors of the crewmembers onboard and ship operating costs (IMO, 2018). At present, the development of autonomous ships is in a relatively low level, i.e. basically at experimental stage. In Japan, the small passenger ship "Sea Friend Zero", the large ro/ro passenger ship "Soleil", and the domestic container ship "Mikage" completed autonomous navigation tests in January 2022 (Eworldship, 2022). In July 2023, China's first digital twin intelligent research test ship "Dolphin 1" completed her autonomous navigation test (Li Liyun, *et al.*, 2023). A small number of autonomous ships have been put into commercial operation. For example, the autonomous container ship "Yara Birkeland" with integrated control and monitoring systems began transporting goods between the ports within Porsgrunnand Brevik in Norway in the spring of 2022 (YARA, 2023).

Santos and Guedes Soares investigated the attitudes of stakeholders in the shipping industry towards autonomous ships, and the result shows that the parties to maritime cargo transport, insurance companies, P&I associations and

port operators all have concerns about the legal risks of autonomous ships (Santos T A, 2018). It is generally believed that the manning of crewmembers onboard is a key element of ship operation, but the prevailing views commonly hold that large commercial autonomous ships are not different from traditional ships in terms of scale, characteristics and functions, and should be recognized as ships unless domestic law requires ships to be manned with crewmembers (Fenton A J, *et al.*, 2023). In China, it is also commonly believed that a commercial unmanned ship shall have the legal status of a “ship” under the prevailing law because the main technical characteristics of such a ship can well match the five constituent elements of a ship, i.e. artificial structure, floating capacity, navigation capability, construction scale and functional use (Sun Yuqing, 2019). Needless to say, it will take a long time to develop large commercial ships into completely unmanned ships. From the perspective of technological feasibility, however, solving the legal issues concerning unmanned autonomous ships has become an important task. The challenge of autonomous ships to the contemporary maritime law is not limited to individual concepts, rules or regimes, but has comprehensive impacts on maritime law including the concepts, value orientations, basic principles of maritime law, as well as multiple legal rules and regimes governing the crewmembers, maritime cargo and passenger transport, ship’s collision, salvage and marine insurance etc.

II. Characteristics of Autonomous Ships and Primary Elements Impacting Maritime Law

To analyse the challenges of autonomous ships to the contemporary maritime law, it is advisable to start from analyzing the characteristics of such ships and the changes of the primary elements impacting maritime law.

The traditional maritime law regimes are framed based upon three primary elements, i.e. ship, crewmembers and shipping company. Research on the challenge of autonomous ships to contemporary maritime law needs to start from analysis of their characteristics as compared with the traditional ships. The characteristics of autonomous ships are analysed as follows from the perspective of their operation, manning, and management based upon the changes of these three primary elements.

A. Automation of Ship’s Operations

In addition to the hull and mechanical equipment, autonomous ships are equipped with multiple sensors to obtain information about the ship’s surrounding environment (Rolls-Royce, 2016) and intelligent network systems for autonomous control to enable automatic operation.

At present, there is no unified description and classification of autonomous ships in the world. For example, the Intelligent Ship Specifications (2023) released by China Classification Society (CCS) categorizes intelligent ships into remotely controlled ships (R1 and R2 levels) and autonomously operated ships (A1, A2, and A3 levels).¹ In June 2017, the 98th Session of the IMO Maritime Safety Committee (MSC) proposed the concept of MASS based on various industry names such as unmanned ships, smart ships and autonomous ships. MASS are defined as ships that can operate independently of human interaction to varying degrees (IMO, 2017). Considering the impacts that autonomous ships' operation has on the regimes of contemporary maritime law, MSC completed the Regulatory Scoping Exercise (RSE) at its 103rd Session (IMO, 2021). Based upon the differences in ship intelligence, RSE officially categorizes MASS into the following four levels. Discussions in this article are based on such classification.

Table 1: Four levels and characteristics of MASS

Levels	Characteristics
L1	Ship with automated processes and decision support. Seafarers operate and control shipboard systems and functions. Some operations may be automated and at times be unsupervised, but with seafarers onboard ready to take control.
L2	Remotely controlled ship with seafarers onboard. The ship is controlled and operated from another location. Seafarers are available are onboard to take control and to operate the shipboard systems and functions.
L3	Remotely controlled ship without seafarers onboard. The ship is controlled and operated from another location.
L4	Fully autonomous ship. The operating system of the ship is able to make decisions and determine actions by itself.

To have a better understanding, the characteristics of MASS at different

¹ The specific meaning is as follows: R1—The main functions of the ship are controlled and operated by the remote control station. Crewmembers on board monitor the status of the ship and take over the operation of the ship in emergency situations or when necessary. R2—The ship is remotely controlled and there is no crew on board. A1—The ship can operate autonomously from anchorage to anchorage and be monitored by remote control. If necessary, the remote control station can remotely control the ship. The ship is operated by the crew and/or pilot when entering and leaving the port and berthing. A2—The ship can operate autonomously from anchorage to anchorage and be monitored by remote control. If necessary, the remote control station can remotely control the ship. The ship is operated by a remote control station when entering or leaving the port and berthing. A3—The ship can operate autonomously from berth to berth and be monitored by remote control. If necessary, the remote control station can remotely control the ship.

levels are analysed as follows:

MASS of L1 are equipped with automated systems to assist crewmembers onboard in navigating and managing traditional ships, e.g. detecting the surrounding environment by the installed sensors, monitoring the operational status of key components such as propulsion systems and rudder, and providing technical support for the ship's navigation in complex environments. An example is the intelligent ultra large gas carriers (VLGC) of "Gas Jupiter" and "Gas Neptune" developed by China Jiangnan Shipbuilding Co., Ltd. in May 2023.

MASS of L2 possess functions of intelligent navigation, engine and cargo management. It also achieves information exchange with the shore through an integrated data collecting and processing platform. A ship can be remotely controlled by the shore-based operators, but is still manned with a master and a few crewmembers to conduct auxiliary operation. The IMO World-Wide Radionavigation System (WWRNS) and the IMO Compendium on Facilitation and Electronic Business can provide technical and policy support for the remote control of ships and the exchange of ship-shore information.

MASS of L3 are controlled by the shore-based operators without crewmembers onboard and guided by the onboard automatic decision-making system. For example, in the project of Maritime Unmanned Navigation through Intelligence in Networks (MUNIN) funded by the European Commission under the 7th Framework Programme, ship automation control mainly includes cabin automation and engine room automation. The MUNIN project sets up a remote operation center where the shore-based operators can remotely monitor and control the ships (European Commission, 2020).

MASS of L4 can navigate and manage autonomously. They can complete route planning, situational awareness, collision avoidance and other behaviors without the remote control of the shore-based operators.

From a technical perspective, MASS of L1 are currently achievable, while MASS of L2 are basically achievable. The technical difficulties lie in MASS of L3 and L4. However, the development of the shipping industry is not solely dependent on technology, but is constrained by economic costs and risk control. From an economic perspective, the shipping industry is both capital intensive and labor intensive with the costs for employing crewmembers accounting for approximately 15% of the total operating costs of a ship. Although MASS of L3 and L4 can save the costs of manning onboard, the price of construction or purchase will be significantly increased due to the need to equip them with a large amount of advanced technical equipment. They also need to be matched with expensive shore control facilities. As a result, the saving of the costs of manning onboard may not be able to compensate for the price of ship's construction or purchase and the operation costs (Mfame Team, 2016). This may cause the shipping industry to take a cautious attitude toward autonomous ships.

B. Changes in Manning onboard and Roles of Ship's Operational Personnel

Compared with traditional ships, some operations of MASS of L1 will be automated and the number of crewmembers will be reduced. MASS of L2 and L3 are remotely controlled by the shore-based operators. In the case of MASS of L2, the crewmembers are required to operate the ship only during her entry into and exit from ports or under other complex situations, and the shore-based operators are on duty throughout the entire voyage, resulting in a significant reduction in the number of crewmembers onboard and a fundamental change in their roles. MASS of L3 is in the mode of completely remote control by the shore-based operators without crewmembers onboard. MASS of L4 are completely operated by the ship independently without both crewmembers onboard and shore-based operators. Therefore, along with the development of MASS from L1 to L4, the roles of crewmembers onboard and then the shore-based operators will gradually do not exist anymore.

C. Cybersecurity Risks Exposed to Autonomous Ships

The traditional ship's ability to resist perils at sea depends mainly on the design, structure, performance and condition of her hull, machinery and equipment, and the manning onboard as well as the company's management. That is, it involves the hardware onboard and the crewmembers onboard together with limited shore-based support. Autonomous ships will significantly depend on both the hardware and software onboard, and also ashore operation and management which involves maintaining the remote control system for the various equipment onboard for ship's navigation, engine operation, cargo operation, fire detection and extinction, and pollution prevention etc.

The key to achieving remote operations of autonomous ships will be the network security and stability as well as the reliable ship-shore interconnection. Due to technological limitations, the risks of intelligent technology application and network security in AI operation systems will bring new challenges to the ship's safety. The smarter the ship, the more reliant it is on the software and communication for operation, and the greater the risk of network security will bear.² In summary, autonomous ships will be exposed to greater cybersecurity risks.

² Systems include, but are not limited to cargo handling and management systems, propulsion and machinery management and power control systems, access control systems, passenger servicing and management systems, passenger facing public networks, administrative and crew welfare systems, and communication systems. See: IMO, 2021. Guidelines on Maritime Cyber Risk Management, MSC-FAL.1/Circ.3/Rev.1.

III. Impact on Obligation of Ship Seaworthiness

In private maritime law, both international conventions and domestic laws governing the carriage of goods or passengers by sea recognize making a ship seaworthy or provide a seaworthy ship as a legal obligation of the carrier. It is also an obligation of the shipowners under a charter party and of the insured under a marine insurance contract. Traditionally, seaworthiness covers a ship's hull and machinery, equipping, manning, supplying and cargo-worthiness. The SOLAS Convention and the STCW Convention etc. provide specific requirements for ship seaworthiness.

Clearly, seaworthiness will become more important for autonomous ships, although onboard manning and supplying will become less important and finally disappear. The impact on the obligation of seaworthiness will be reflected in several aspects as analysed below.

A. Scope of Seaworthiness: Hardware and Software

Along with the development of MASS from L1 to L4, more and more advanced hardware and software will be required.

In accordance with the characteristics of autonomous ships introduced *supra*, as compared with the traditional ships, MASS of L1 shall be equipped with hardware and software of automated systems which can intelligently assist the crewmembers onboard in navigating and managing ships. MASS of L2 shall be equipped hardware and software to enable the ships possessing functions of intelligent navigation, engine management and cargo management as well as achieving information exchange with the shore. MASS of L3 shall be equipped with hardware and software for the remote monitoring and controlling by the shore-based operators. MASS of L4 shall be equipped with hardware and software to enable autonomous operation by themselves.

B. Special Requirements: Resisting Cybersecurity Risks

Operation of autonomous ships is extremely dependent upon the onboard automatic monitoring and controlling system and the remote ship-shore communication system. Consequently, as special requirements for the seaworthiness of autonomous ships, the software should be able to resist the cybersecurity risks.

Cybersecurity risks have become a new type of maritime risk in the 21st century. "Maritime Cyber Priority 2023: Staying secure in an era of connectivity", published by DNV GL, points out that shipping giants such as MAERSK, COSCO, MSC and CMA CGM have all experienced cyber-attacks and that cyber-attacks may further disrupt global shipping in the future, leading to ships' collisions and groundings, and possibly even threatening human health

and safety. Obviously, autonomous ships are much more prone to cybersecurity risks. Once hackers attack the ship's information and communication technology (ICT) system and introduce malware or viruses into situational awareness or decision-making software, they may be able to control the ship and change her course. Thus, the ability of resisting cybersecurity risks will become special requirements for the seaworthiness of autonomous ships, especially for MASS of L2 to L4.

MSC adopted the Resolution of Maritime Cyber Risk Management in Security Management Systems (MSC.428(98)) at its 98th Session in June 2017 (IMO, 2017). The Resolution recognizes that approved safety management systems should appropriately address cybersecurity risks in accordance with the goals and functions of the ISM Code. Court precedents have shown that violation of the ISM Code constitutes unseaworthiness if the violation seriously affects the safety of the ship navigation.³ In order to protect shipping from current and emerging cyber threats and vulnerabilities, it is necessary to incorporate the ability of resisting cybersecurity risks into the evaluation of seaworthiness of autonomous ships.

Guidelines issued by IMO and classification societies will constitute the industry standards for cybersecurity. According to the IMO Guidelines on Maritime Cyber Risk Management 2021 (MSC-FAL.1/Circ.3), effective cyber risk management encompasses both operational technical risks and information technology risks, and includes the following processes: assessing and communicating; accepting, avoiding, transferring or mitigating cyber risks. Such an ability to reduce the occurrence of cybersecurity incidents and mitigate their impacts is known as cyber resilience.

In the area of cybersecurity risk identification, analysis and assessment, IMO updated its Strategic Implementation Plan (SIP) for e-navigation which calls for the coordinated collection, integration, exchange, presentation and analysis of maritime information onboard and ashore through electronic means to enhance berth to berth navigation and related services concerning maritime safety and security, as well as the protection of the marine environment (Heike Deggim, 2023).

In terms of cyber risk acceptance, avoidance, transfer and mitigation, the CCS Guidelines for Maritime Cyber Risk Assessment and Management System indicate that an effective response to cyber risks consists of four parts, i.e. initial assessment, recovery of systems and data, investigation of incident and prevention of recurrence. The International Association of Classification Societies (IACS) has issued two Unified Requirements on Cyber Safety (UR E26 and E27). UR E26 requires that systems should be able to be protected and hardened by third-party equipment vendors to ensure that the network has the ability to be shut down, reset, restored and rebooted. UR E27 sets higher

³ Shanghai Maritime Court, (2019) H72MC No. 463.

requirements for IT risks in terms of communication integrity, information confidentiality and malicious code protection. Det Norske Veritas (DNV) has issued a cybersecurity class notation called Cyber Secure based on its Cybersecurity Recommended Practice (DNVGL-RP-0496) to improve the cyber resilience of ships.

No doubt, autonomous ships depending more on communication software may be exposed to greater cybersecurity risks. Shipping companies managing autonomous ships should establish cybersecurity management system through which information is collected, analysed and utilised to ensure that safe practices and working environment for ship's management are provided in accordance with the ISM Code. In addition, cybersecurity risks are dynamic and diverse. Thus, the cybersecurity requirements, validation procedures and countermeasures in the ship seaworthiness management should be continuously updated to address cyber threats to autonomous ships.

C. Exercise of Due Diligence: Special Inspection/Survey

The carriers or shipowners are obligated to exercise due diligence to make ships seaworthy or provide seaworthy ships. Ship inspection or survey is aimed at ensuring that ships conform to the required technical standards and states, avoiding technical loopholes and potential safety hazards in ships. In practice, ship inspection/survey is a key means of exercising due diligence to make a ship seaworthy or providing a seaworthy ship. The important ship inspection or survey is mainly conducted by surveyors of a ship classification society by virtue of the inspection or survey specifications promulgated by the society based upon the SOLAS and other conventions and domestic law.

Due to the characteristics of and the hardware and software required by autonomous ships, special inspection or survey specifications are needed for such ships. For example, CCS has issued a number of inspection specifications including the Interim Rules on Technology and Inspection of Autonomous Navigation Tests of Ships, the Inspection Guidelines for Additional Marks for Autonomous Navigation of Ships, the Inspection Guidelines for Intelligent Engine Rooms of Ships and the Specifications for Intelligent Ships. In particular, inspection or survey for the autonomous ships involves both the AI navigation systems onboard and the shore monitoring and controlling system.

D. Manning onboard: Adaptive Changes in Standards of Minimum Safe Manning

In order to ensure the safety of ships, IMO adopted the Principles of Minimum Safe Manning on 30 November 2011 which require that the number of crewmembers should be sufficient enough to ensure the safety of ship, her crew, passengers, cargo and property as well as the protection of marine

environment (IMO, 2011). Article 14 of Chapter 5 of the SOLAS Convention requires the States parties to “ensure that all ships are manned by a sufficient number of competent crewmembers”.

Traditionally, a sufficient number of crewmembers are a requisite for ship seaworthiness and an important factor in ensuring the safety of navigation. What constitutes a “sufficient number” is governed by the applicable domestic law. There are two main approaches in prescribing the minimum safety manning in the world, i.e. prescribing the specific positions and numbers of minimum safe manning, or allowing the competent authorities of the States to exercise discretion (Carey L, 2017). In China, Paragraph 2 of Article 33 of the Maritime Traffic Safety Law stipulates that “A ship shall fulfil the minimum safe manning requirements and be manned by crewmembers holding qualified and valid certificates.” China promulgated regulations specifying the safety manning standards for various types of ships and thus follows the above first approach.

In the case of autonomous ships, MASS of L2 will be basically operated remotely by the shore-based operators, although they will be manned with a master and a few other crewmembers onboard. MASS of L3 will be completely operated remotely by the shore-based operators without manning onboard. In the case of MASS of L3, one of the shore-based operators may be regarded as the master of the ship (Yuan Xue and Jiang Aihua, 2023). MASS of L4 will be fully autonomous without manning onboard and shore-based operators, although a ship may still need a human captain to intervene the ship control when necessary.⁴ Therefore, autonomous ships shall bring about adaptive changes in the manning onboard. As a result, the standards of minimum safety manning shall be significantly adjusted from reduction of crewmembers onboard to unmanning onboard along with the development of MASS from L1 to L4. Such adjustment largely depends upon the level of automation and the level of shore support (IMO, 2011).

Such adjustment shall also inevitably bring about the consequential change of the rules of watchkeeping onboard.

IV. Emergence and Legal Status of Shore-based Operators

A. Shore-Based Operators Replacing Crewmembers onboard

With the development of autonomous ships, the legal obligations and

⁴ The Second Session of MASS Joint Working Group of IMO discussed that regardless of the level of autonomy or operating mode adopted by MASS, a human master should be appointed as the captain and be responsible for the ship, and the captain should be able to intervene in ship control when necessary.

responsibilities of masters will be allocated to others (Carey L, 2017). In the case of MASS of L2, the functions of masters and other crewmembers onboard will be largely performed by the shore-based operators. In the case of MASS of L3, such functions will be fully performed by the shore-based operators. In other words, in the case of MASS of L2 and L3, the shore-based operators will be as important as the crewmembers onboard the traditional ships. In the case of MASS of L4, the shore-based operators will disappear, although a ship may still need a human captain to intervene in the ship's control when necessary as aforementioned.

The shore-based operators perform their duties in the ship's navigation and management including collision avoidance, maintenance, visibility, lookout and watchkeeping (European Commission, 2013). Some autonomous ship research projects indicate that the shore-based operators are also required to undertake the functions such as VHF communications, VTS reporting, onboard energy management, condition monitoring and maintenance plan formulation.

The shore-based operators shall bear the following three responsibilities. First, they shall take all necessary and appropriate measures to prevent ships' collisions. Secondly, they shall maintain the computer systems, making regular testing and inspection of the computer programs for loading, discharging, fire detection and extinction, cargo hold ventilation and pollution prevention equipment. Thirdly, they shall maintain watchkeeping, pay attention to the navigation conditions, traffic density, adjacent navigational hazards, and predict weather based on available information. Once encountering visibility restrictions or other bad weather conditions, they shall ensure that autonomous ships are able to navigate safely without crewmembers onboard (European Commission, 2013).

B. Legal Status of Shore-based Operators

In the development of MASS from L1 to L4 defined by IMO, the roles of shore-based operators is constantly changing, and their functions, responsibilities and legal status are different. Considering the important roles and functions of the shore-based operators, regulations on the safety management of MASS of L2 and L3 shall be extended from onboard to remote operation centers. However, a premise of such extension is to clarify the legal status of the shore-based operators.

Clarifying the legal status of the shore-based operators is needed for the effective operation of the autonomous ships. RSE places high priority on addressing the qualifications and roles of the shore-based operators. Two issues need be addressed in this regard, i.e. whether they shall be deemed as crewmembers, and whether a shore-based operator shall be deemed as a shipmaster.

There is no unavoidable obstacle in the creation of a new type of legal

position of the shore-based operators in maritime law from the perspective of legal technology, but its actual necessity and the feasibility of jurisprudence need be proved.

C. Shall Shore-based Operators be Deemed as Crewmembers?

Some States use the term “onboard” or similar expressions when defining “master” or “crew” in their domestic laws. Article 31 of the Chinese Maritime Code stipulates that “the term ‘crew’ means the entire complement of the ship, including the Master.” This means a crewmember is working and take a specific position onboard. Some international conventions have similar provisions. Paragraph 1 (f) of Article 2 of the Maritime Labor Convention 2006 (MLC) stipulates that a seafarer means any person who is employed or engaged or works in any capacity on board a ship to which this Convention applies.

IMO defines shore-based operators as “qualified personnel who are employed or involved in operating part or all of the MASS functions within remote operation center”. They are apparently not “onboard” and therefore go beyond the scope of crewmembers under the prevailing domestic laws and international instruments. In particular, all the prevailing instruments of IMO assume that a master is on board a ship. In conclusion, crewmembers operate and manage a ship onboard. Noticeably, the laws and international instruments concerning masters and other crewmembers were drafted before autonomous ships came into existence. This raises the issue of whether the shore-based operators shall or can be deemed as crewmembers. This issue will have a significant impact on the contemporary maritime law regime governing masters and other crewmembers, and even other related regimes. For example, it involves whether the carriers will be entitled to the nautical fault exemption under Article 4(2) of the Hague-Visby Rules in the case of loss of or damage to the goods carried onboard caused by the fault of the shore-based operators, whether the shore-based operators shall have the same rights as the crewmembers, especially maritime lien (Sun Siqi, 2021). Moreover, crewmembers are required to obtain skills and competency for safe shipping. Only those who are awarded the STCW Certificates are allowed to operate ships, so that the crewmembers are able to work on ships. However, requirements of STCW fail to consider specific skills which are necessary for autonomous ships. Such skills refer to information technology, robotics, systems thinking, communication, software management (Ghosh, Samrat and Gholam Reza Emad, 2024). Therefore, a special competency framework should be drawn for shore-based operators in the near future.

Advisably, clarifying the legal status of the shore-based operators should be based upon their detailed functions. The MUNIN project divides the shore-based operators into three types based on their different functions, i.e. Shore Control Centre Operators (SCCO), Shore Control Centre Engineers (SCCE),

and Shore Control Centre Situation Room Teams (SCCSRT).⁵ Among them, SCCO and SCCSRT are responsible for navigating and managing autonomous ships. Therefore, they may be deemed as the ship managers if they provide services as entrusted by the shipowners. Where individual persons within SCCO and SCCSRT are employed by the shipowners, it is appropriate to deem them as the servants of the shipowners or the carrier under the prevailing domestic laws and international instruments. SCCE is only responsible for ship maintenance on the occurrence of problems in the autonomous navigation of a ship. SCCE may be hired by the shipowners on a long-term basis or only after the occurrence of an accident such as network system malfunction or cyber pirate's control of a ship. Thus, SCCE hired only after the occurrence of an accident are more comparable to repairmen because of their temporary intervention in the event of ship's failure (Frank Stevens, 2021) and may be deemed as an independent contractor. In the case where SCCE is hired on a long-term basis, it seems also appropriate to deem them as an independent contractor or ship manager, provided that the individual persons of SCCE within a shipping company shall be deemed as the servants of the shipowners or the carrier.

In summary, caution need be taken in modifying the concept of "crew" or "crewmember" or directly interpreting the shore-based operators as crewmembers. By comparison, it is advisable to qualify a shore-based operator as *quasi*-crewmember due to his/her functional equivalence to a crewmember onboard, instead of traditional crewmember. *Quasi*-crewmembers replace traditional crewmembers in fulfilling duties in the navigation and management of autonomous ships and assume the same or similar responsibilities as traditional crewmembers in the event of failure in fulfilling these duties. Noticeably, the maritime lien or other special rights enjoyable under maritime law by the crewmembers are traditionally and mainly based upon the special risks exposed to them during their service onboard. Apparently, the shore-based operators are not exposed to such risks and consequently it seems not justifiable for them to enjoy such rights. As a principle, where the shore-based operators commit faults in performing their functions resulting in loss or damage to third parties, the shipowners shall bear vicarious liability. However, whether such faults may be deemed as nautical faults and consequently the carrier or actual carrier of goods may avail of the exemption of liability under the Hague-Visby Rules or similar domestic law seems not a pure issue of jurisprudence, but also

⁵ Shore control centre operators simultaneously monitor the safe operation of several autonomous ships, issuing advanced instructions to control the ships, such as updating the navigation plan or operating range of the autonomous system. Shore control centre engineers are responsible for assisting the operator in the event of technical issues, and maintaining the ship's maintenance plan based on the ship's condition, ensuring that the technical system has sufficient reliability for the next voyage. Shore control centre situation room teams can directly remotely control the ship through the remote control support system if necessary.

an issue of public policy in consideration of two factors. First, denial of the exemption may possibly seriously undermine the enthusiasm of the shipowners for the intelligent transformation of shipping which involves a significant increase in the costs of ship construction or purchase and technical maintenance as well as additional risks. Secondly, the shore-based operators will have functional equivalence to the crewmembers on board the traditional ships. They may also commit faults in navigating or managing the autonomous ships, and committing such faults may be even easier owing to characteristics of remote control including difficulties in complete perception of the potential dangers to ships mainly based upon the information which the sensors onboard collect and transmit.

D. Shall Shore-based Operators be Deemed as a Shipmaster?

Following the IMO Resolution A.443(XI), Article 5.2 of the ISM Code stipulates that the Company should establish in the safety management system that the master has the overriding authority and the responsibility to make decision with respect to safety and pollution prevention, and to request the company's assistance as may be necessary. The Regulations on Crewmembers of China also stipulates in Article 20 that the master has the right of independent action and shall bear the ultimate responsibility with respect to ship's safety, security and pollution prevention. Thus, the master on board a traditional ship is the decision-maker in these specific respects. Besides, the master has other functions. Under the Chinese Maritime Code, in addition to his primary responsibility for the navigation and management of a ship, the master has the following functions in the nature of public or private law: (a) similar to a policeman, confining or taking other necessary measures against those who have committed crimes or violated laws or regulations onboard; (b) similar to a notary public, issuing a proof validating any occurrence of birth or death onboard in the presence of two witnesses; (c) issuing bills of lading on behalf of the carrier; (d) concluding a contract of salvage on behalf of the shipowners and/or cargo-owners.

As aforementioned, a human master need be appointed as the master and be able to intervene in the ship's control when necessary even in the case of MASS of L4, although the master will be shore-based.

Therefore, as an ashore-based operator shall be appointed as the master who is generally responsible for the ship's navigation and management in the case of MASS of L2 to L4, the legal regime governing the functions of master cannot be fully abolished. In other words, the functions of master regarding responsibility for the ship's navigation and management including safety, security and prevention of pollution shall or can be maintained, although such functions will be taken over by an ashore-based operator who is appointed as the master. However, the aforementioned other functions of ship-based

master including those similar to a policeman or notary public and the commercial functions may be abolished.

V. Other Typical Examples of Impacts on Legal Regimes of Maritime Law

A. Impact on Legal Regime of Ships' Collision

Ships' collisions are the major type of maritime accidents. Predictably, collisions cannot be fully avoided in the age of autonomous ships. Under the Collision Convention 1910 and the domestic laws such as Chapter VIII of the Chinese Maritime Code, the liability for loss or damage resulting from a ships' collision is based upon the fault on the part of the colliding ships. That is, if the collision is caused by the fault of one of the ships, the one in fault shall be liable therefor; if both the colliding ships are at fault, each ship shall be liable in proportion to the extent of her fault with the exception that if the respective faults are equal in proportion or it is impossible to determine the extent of the proportion of the respective faults, the liability of the colliding ships shall be apportioned equally. In practice, the faults committed in ships' collisions are mainly human errors, especially the failure of the masters or officers on duty in complying with the COLREGs or in the exercise of good seamanship.

With respect to the autonomous ships, the implementation of the legal regime of ships' collisions need be modified in the following two aspects:

COLREGs are formulated mainly to guide the masters and officers onboard how to take actions to avoid collisions and consequently are used in determining whether contributory faults are committed by a ship in collision. MASS of L1 will be manned with only a few crewmembers onboard and MASS of L2 to L4 will be unmanned onboard. Thus, autonomous ships will be objectively unable to meet some of these requirements of the COLREGs. For example, Rule 5 of the COLREGs stipulates that every vessel shall keep a proper look-out so as to make a full appraisal of the situation and of the risk of collision. In a case judgement in UK, however, it shows that a proper look-out by sight and hearing requires crewmembers onboard.⁶

Predictably, proper look-out and other rules in COLREGs will still be required for autonomous ships, but the responsibilities now undertaken by the crewmembers onboard will be taken over by the shore-based operators in the case of MASS of L2 and L3. In the case of MASS of L4, the responsibilities will be taken over by the shore-based person appointed as the master in case emergency only. In addition, the development of obstacle detection and

⁶ *The Dea Mazzella* [1958] 1 Lloyd's Rep.10.

avoidance system of autonomous ships cannot blindly comply with the COLREGs (Sable Campbell, *et al.*, 2014). Therefore, the COLREGs or compliance therewith need be modified to fit for such ships.

Besides failure in complying with the modified COLREGs committed by the shore-operators, it is foreseeable that contributory faults committed by autonomous ships will be in the form of breakdown or failures in proper working of the aforementioned hardware or software peculiar to such ships, unless a collision is caused by *force majeure* or other causes not attributable to the fault of either party or the cause thereof is left in doubt.

Consequently, more technical difficulties may arise in the determination of contributory faults and liability in the collisions of autonomous ships.

B. Impact on Legal Regime of Marine Insurance

The automatic operation of autonomous ships will face two special risks. One is the risk of reliability of autonomous decision-making using new technologies. The other is the risk of network hijacking caused by network pirates invading the AI systems. The marine insurance of autonomous ships inevitably needs to take such peculiar potential risks into consideration, and the coverage of cybersecurity risks need be highlighted.

In response to cybersecurity risks, several classification societies and IACS have issued multiple specifications on cybersecurity requirements for autonomous ships. For example, the requirements for enhancing ship network security resilience issued by IACS (UR E26 and UR E27) will be implemented on new ships with construction contracts signed on or after 1 January 2024. Shipowners shall ensure that such ships meet the requirements of classification societies. Otherwise, an insurance contract may be terminated by the insurer due to triggering of classification clauses by the applicant or the insured. Predictably, the applicant or the insured will be strictly required to ensure the reliability of the software of autonomous ships and ship's compliance with the corresponding requirements of classification society.

Along with the development of MASS from L2 to L4, the requirements for crewmembers will be replaced by those for the shore-based operators in marine insurance. On the other hand, loss of life or personal injuries and other risks concerning crewmembers will disappear in P&I insurance for MASS of L3 and L4.

In addition, autonomous ship's software product liability insurance may be highlighted for the reason that AI navigation systems are likely to be considered as "products" and AI navigation systems providers may be asked to bear the product liability for the damage caused by the product defects (Fan Xiaobo and Chen Yijie, 2021). However, such insurance seems beyond the scope of marine insurance.

VI. Conclusions

From the above analysis, the following conclusions may be drawn:

(a) The main characteristics of autonomous ships are the automation of ship operations, changes in the manning onboard and emergence of shore-based operators, and exposure to greater cybersecurity risks.

(b) Autonomous ships will have significant impact on the obligation of making a ship seaworthy or provide a seaworthy ship, including extending the scope of seaworthiness to both hardware and software, special requirements for resisting cybersecurity risks, adaptive changes in the standards of minimum safety manning in the case MASS of L1 and L2.

(c) Advisably, the shore-based operators in the case of MASS of L2 are not suitable to be deemed as crewmembers. The shore-based operators in the case of MASS of L3 may be deemed as *quasi*-crewmembers and the shore-based captain in the case of MASS of L4 may be deemed as *quasi*-shipmaster due to function equivalence in the area of ship's navigation and management. Consequently, the legal regime governing masters and other crewmembers need be modified.

(d) As other typical examples of impacts on the existing legal regimes, COLREGs or their compliance need be modified and determination of contributory faults will involve more technical complexes with respect to the regime of ship's collisions; cybersecurity risks need be covered and the requirements for the crewmembers onboard will be replaced by those for the shore-based operators in the case of MASS of L2 and L3 with respect to the regime of marine insurance.

(e) Where the prevailing regimes or rules of the contemporary maritime law may be applied to autonomous ships through appropriate interpretation thereof, it is not advisable to establish new regimes or rules.

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From Securities to Currencies: The Regulatory Consequences of Adopting Cryptocurrencies as Legal Tender

*Joseph Parampathu**

ABSTRACT

In 2021, El Salvador designated Bitcoin as legal tender within that country, payable for all debts, public and private. The move is novel in the realm of cryptocurrency technology, but fits within a time-honored battle for currency control with which every country engages. Bringing Bitcoin into the world of state-supported currencies brings unique challenges from a regulatory and economic standpoint as the imprimatur of a legal tender designation has spillover effects in foreign currency transaction law, foreign exchange finance, payment settlements, and tax law, among other fields. This review article examines the impacts of legal tender designations in these various areas, maps the current regulatory framework of cryptocurrency transactions, and analyzes how future developments may affect these determinations.

KEYWORDS: Bitcoin, cryptocurrency, finance, technology, property, taxation, United States

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I . The El Salvador Regulation

As of June 8, 2021 the country of El Salvador recognizes Bitcoin as a valid form of payment that must be accepted for public and private transactions, following legislation passed by its Legislative Assembly.¹ The country provided digital wallets to Salvadorans, has launched educational programs, and has sought to make itself a destination for Bitcoin users by encouraging vendors and the public to transact in Bitcoin.² The designation of Bitcoin as legal tender may have particularly interesting effects on the market for international transactions dealing with Bitcoin and U.S dollar by users in the U.S, and by those who seek enforcement of their claims in U.S courts. If the El Salvador regulation is notable for its brevity, U.S legislators have shied away from such a direct approach to Bitcoin. Instead, treatment of Bitcoin in the U.S tends to depend upon the regulator involved, with each regulator promulgating rules within its own domain. Because of this multi-faceted approach to Bitcoin legislation in the United States, it will be necessary to examine the series of regulators that play a part in Bitcoin regulation within the U.S before discussing the potential effects of the El Salvador regulation.

¹ Asamblea Legislativa (Legislative Assembly of El Salvador). *El Salvador, Primer País del Mundo en Reconocer al Bitcoin como Moneda de Curso Legal*, ASAMBLEA LEGISLATIVA (June 9, 2021), <https://www.asamblea.gob.sv/node/11282>.

² Gorjón, Sergio. *The Role of Cryptoassets as Legal Tender: The Example of El Salvador*. BANCO DE ESPAÑA, (2021).

II. Securities Exchange Act and Howey Test – What Makes a Security?

The Securities Exchange Act of 1934 (“Exchange Act”), adopted by Congress to regulate a vast array of financial transactions, created the Securities and Exchange Commission (“SEC”). Because of the far-reaching regulations governed by the SEC, there may be some prudence to looking to the Exchange Act and securities law for an understanding of Bitcoin legislation in the U.S, but this connection tends to be overstated. While Bitcoin and other cryptocurrencies can be utilized as speculative assets, this alone does not make securities law an appropriate forum for all disputes involving Bitcoin. Regardless, for those situations in which Bitcoin is treated as a security, the following discussion will be useful for providing a background to securities law and its scope. The Exchange Act, as amended defines a security as:

The term “security” means any note, stock, treasury stock, security future, security-based swap, bond, debenture, certificate of interest or participation in any profit-sharing agreement or in any oil, gas, or other mineral royalty or lease, any collateral-trust certificate, preorganization certificate or subscription, transferable share, investment contract, voting-trust certificate, certificate of deposit for a security, any put, call, straddle, option, or privilege on any security, certificate of deposit, or group or index of securities (including any interest therein or based on the value thereof), or any put, call, straddle, option, or privilege entered into on a national securities exchange relating to foreign currency, or in general, any instrument commonly known as a “security”; or any certificate of interest or participation in, temporary or interim certificate for, receipt for, or warrant or right to subscribe to or purchase, any of the foregoing; but shall not include currency or any note, draft, bill of exchange, or banker’s acceptance which has a maturity at the time of issuance of not exceeding nine months, exclusive of days of grace, or any renewal thereof the maturity of which is likewise limited.³

Some of those instruments falling within this expansive definition bear a similarity to financial uses for cryptocurrencies. Alberts and Fry conduct a point-by-point analysis of why most of these terms do not apply to Bitcoin. While Bitcoin is analogous to most cryptocurrencies, some digital tokens (representations of value which are issued by a centralized authority, but which have been used in conjunctions with traditional cryptocurrencies as representations of a cryptocurrency holder’s rights) may fall under these definitions.⁴ Alberts and Fry hold that the only term in the Exchange Act’s

³ 15 U.S.C. § 78c (a)10 (2018)

⁴ Alberts, Jeffrey E. & Fry, Bertrand. *Is Bitcoin a Security*. 21 BUJ SCI. & TECH. L. 1. (2015).

definition of security which holds any weight with regard to Bitcoin is “investment contract.”⁵ With regard to the term “investment contract,” *SEC v. W. J. Howey & Co.* defined it, for the purposes of the Exchange Act, as “a contract, transaction, or scheme whereby a person invests his money in a common enterprise and is led to expect profits solely from the efforts of the promoter or a third party.”⁶ This has been articulated as a three pronged test, which if met, requires that the transaction be treated as a security. The test is if the contract “comprises (1) the investment of money (2) in a common enterprise (3) with an expectation of profits to be derived solely from the efforts of the promoter or a third party.”⁷

Applying this definition to cryptocurrencies can be problematic. Money exchanged for cryptocurrencies is often traded in a manner more reminiscent of an arms-length transaction than a going concern. With regard to the common enterprise prong, the district courts have been varied in their treatment. Some follow a standard based on horizontal commonality, or pooled assets (what would occur if the money exchanged for a cryptocurrency was used to back the cryptocurrency and keep it afloat), while others follow a standard of vertical commonality in which the investment’s success relies on the promoter’s ability, or at least that investor success is dependent on the success of others involved in the scheme.⁸ This may be relevant to those who participate in a cryptocurrency with an initial coin offering (“ICO”), an environment analogous to other initial funding schemes such as stock offerings in the search of speculative profit, and the court in *United States v. Zaslavskiy* upheld the sufficiency of an indictment for securities fraud in such a case, ICOs are a form of cryptocurrency use which is most inimical to the idea of cryptocurrencies as currencies, or as legal tender.⁹ Where existing cryptocurrencies are traded on a centralized exchange, where the exchange generates profit only from commissions or trading fees, but not from the overall profitability of the underlying assets (the cryptocurrency), narrow commonality would not exist.¹⁰

⁵ *Id.* at 14.

⁶ *SEC v. W. J. Howey Co.*, 328 U.S. 293, 66 S. Ct. 1100, 90 L. Ed. 1244 (1946).

⁷ *SEC v. SG Ltd.*, 265 F.3d 42, 46 (1st Cir. 2001) (citing *Howey*, 328 U.S. 298-99) (finding a digital token, which provided returns for token holders, and which the court found to meet the three-pronged *Howey* test, to be considered a security under the Exchange Act).

⁸ *SEC v. Glenn W. Turner Enterprises, Inc.*, 474 F.2d 476 (9th Cir. 1973).

⁹ See Memorandum & Order at 5-16, *United States v. Zaslavskiy* (E.D.N.Y. 2017), (No. 17-cr-647), 2018 WL 4346336.

¹⁰ See generally *Brodt v. Bache & Co.*, 595 F.2d 459, 461 (9th Cir. 1978) (rejecting requirement for horizontal commonality amongst other investors and requiring only vertical commonality between investor and promoter to be a security); *Mordaunt v. Incomco*, 686 F.2d 815 (9th Cir. 1982) (citing *Brodt* to determine discretionary commodities trading accounts were not securities because no common enterprise existed between brokers charging commissions and traders holding accounts).

With regard to the third prong and profitability derived from the efforts of the promoter or third party, it may be difficult to argue that people who profit from a cryptocurrency have done so solely through the efforts of a promoter or a third party. Even, where a user solely exchanges between state currency and cryptocurrency, the profit from this exchange may not necessarily be as profit from a security just because they have profited from changes in the marketplace. Otherwise, a person who profits from the fluctuation in price of any commodity could equally be considered to have met the third prong in that manner, for a security.

On the other hand, where cryptocurrency is mined in a decentralized form, its “issuance” to the miner may more closely represent income provided in exchange for performing the work of furthering the ledger or as gambling winnings rather than a profitable dividend. While the miner may profit from fluctuations in price between when they receive control of the new issuance and when they exchange their winnings, their initial action in mining is likely more akin to wage income. Because of the similarities in treatment of gambling winnings and wage income, this analogy may be particularly suitable.

Though the SEC has not yet taken a clear stance on whether cryptocurrencies are considered to be securities, or whether they fall under its purview for another reason, in many situations, due to the vast nature of the Exchange Act’s provisions, and the subsequent interpretations of case law such as *Howey*, it is likely that transactions using cryptocurrencies are generally subject to securities laws.¹¹ This is due, in part, to the reality the currently existing economy surrounding cryptocurrency transactions. Where a transaction appears to operate quite similarly to an “investment contract,” then the transaction will fall under the *Howey* determination for a security, and is regulated by the SEC. Regardless, Congress has turned its eye towards cryptocurrency regulation. The Exchange Act was originally enacted during a time of investor strife and anger at unscrupulous securities issuers and brokers acting under little regulation, and similarly scarce public knowledge of underlying value. Today, with new entrants to the cryptocurrency markets readily investing in markets prior to conducting due diligence, instances of fraud have led to calls for regulation by those looking for a remedy, or at least some clarity. On the one hand, these calls for action may be premature, or at least might wish to proceed with caution. Existing legislation provides numerous protections for fraud and theft, but, on the other hand, if users’ expectations are already primed by their understanding of the securities markets,

¹¹ See Hazen, Thomas Lee, *Virtual or Crypto Currencies and the Securities Laws*. 38 FUT. & DERIV. L. REP. 1, Issue 10, (2018). <http://dx.doi.org/10.2139/ssrn.3257449>.

they may be incorrectly assuming that they are operating with something akin to securities anyway. Thus, users may be more likely to fall victim when they are misled about the nature of cryptocurrency transactions or the financial decisions they are making. Still, where these financial decisions are premised on something more akin to false advertising than to financial fraud or illicit market manipulation, regulators may consider the prudence of requiring disclosures regarding the fiduciary responsibilities (or lack of them) owed to cryptocurrency users. Further, with a strong movement of worldwide cryptocurrency mining operations towards U.S markets after crackdowns in Asian markets, American investment has grown in the cryptocurrency space.¹² Additionally, as institutional investors look to diversify their holdings and become involved in the cryptocurrency space, calls for regulation (if not from them, then from their investors) may be likely to rise. Finally, with some nations, including the United States, considering venturing into using crypto-tokens such as Central Bank Digital Currencies (“CBDCs”), and other jurisdictions such as El Salvador starting to accept Bitcoin as legal tender, the questions surrounding digital currency use and their regulation may become ever more urgent.¹³ As athletes and mayors have signed employment contracts to receive part of their compensation in cryptocurrencies, the steady transformation of the financial reality of cryptocurrencies appear to be converging with the intended purpose stated in the initial Bitcoin whitepaper of an “electronic payment system.”¹⁴ If U.S financial regulation tends to treat economic products in keeping with their actual economic use, and their function within particular transactions, the normalization of cryptocurrency use, and particularly the introduction of Bitcoin into the El Salvadoran market as a form of tax payment, in retail uses, and in employment wages, all have potential effects on the regulatory environment.

Because the SEC’s definition for security includes many financial instruments which are not “investment contracts,” instruments which fail the *Howey* test may still be judged a security under the presumptive “family resemblance” test set by the Supreme Court in *Reves v. Ernst & Young*.¹⁵ This

¹² Ostroff, C., & Yu, E. *Cryptocurrency Companies Are Leaving China in ‘Great Mining Migration’*. WALL STREET JOURNAL (August 22, 2021), <https://www.wsj.com/articles/cryptocurrency-companies-are-leaving-china-in-great-mining-migration-11629624602>.

¹³Examining the President’s Working Group on Financial Markets Report on Stablecoins: *U.S. Senate Committee on Banking, Housing and Urban Affairs*, 117th Cong. (2022) (Testimony of Jean Nellie Liang). <https://www.banking.senate.gov/imo/media/doc/Liang%20Testimony%20202-15-22.pdf>

¹⁴ Nakamoto, S. *Bitcoin: A Peer-to-Peer Electronic Cash System*. DECENTRALIZED BUSINESS REVIEW, 21260. (2008).

¹⁵ *Reves v. Ernst & Young*, 494 U.S. 56, 110 S. Ct. 945, 108 L. Ed. 2d 47 (1990). *aff’d*, 937 F. Supp. 834, (W.D. Ark. 1996). *aff’d*, 507 U.S. 170, 113 S. Ct. 1163, 122 L. Ed. 2d 525 (1993).

test assumes that any note is a security unless it meets some mitigation factors meant to rule out (1) buyer and seller motivations (the considerations for a security ought to be primarily financial), (2) the plan of distribution (securities involve common trading, or “a market”), (3) “reasonable expectations of the investing public,” (4) some other suitably exceptional reason.¹⁶

The “family resemblance” test can include a diverse ensemble: notes include, of course, treasury notes, which are often used as currency-equivalents. While it would be unlikely for a court to consider cryptocurrency sales as notes, this may depend on the changing nature of the cryptocurrency space. CBDCs in particular bear a striking resemblance in their likely use and function that presents a ready connection to the treasury note-currency question.

To understand why this ambiguity exists, and where cryptocurrencies may fall outside the purview of securities laws, it is necessary to examine the ways in which cryptocurrency transactions occur and how these relate to other financial transactions.

III. The Current State of Cryptocurrency

Because we are concerned with the economic reality of cryptocurrency transactions, we must begin with an understanding of how cryptocurrencies are used and exchanged today. Understanding the nature of these cryptocurrencies will help to develop an understanding of where they fall within or outside of the current regulatory framework, and how they can be more readily placed within the existing financial regulatory system. For cryptocurrencies which are mined through users’ “proof-of-work” completion of cryptographic calculations to contribute to creating and validating the public ledger, cryptocurrency may be distributed during this completion of one block of ledger. In doing so, the miner (or group of miners) receives a tranche of cryptocurrency as a reward. The miner completes the “work” of writing the ledger (and therefore authenticating transactions) and in exchange receives the cryptocurrency reward as payment. Where the underlying software requires more computing power to successfully mine later blocks in the ledger, many miners may be providing this “work” without any pay, and successful payment may be more a matter of waiting to strike gold, than earning a wage. While the economic reality of this function may appear steadier when multiple miners pool together their resources and share rewards, the underlying cryptographic software operates by engaging the computing power to make guesses about the

¹⁶ *Id.*

accurate solution to a problem. Because the problems are created such that guessing is more computationally efficient than attempting to “solve” the problem (finding a programmatic solution to mine all remaining blocks), on the level of each computation, the interaction may actually be very similar to gambling on a slot machine, but where the action of pulling the slot provides a useful function (the “proof of work”) which helps maintain the integrity of the currency regime itself.

Mined cryptocurrency may then be exchanged between users or stored in an electronic wallet for safekeeping, with exchanges recorded on the public ledger and validated through subsequent use. The decentralized nature of the public ledger solves certain issues necessary for understanding its role within the existing financial framework. Because the ledger is publicly maintained—no central authority manages the ledger and has the ability to manipulate or modify information on the ledger (including rewriting past transactions to “steal” cryptocurrency from one address and move it to another) without consensus of many other parts of the cryptocurrency ecosystem, (a feat which, due to the nature of consensus protocols, by itself would require an exorbitant amount of “work”, such that it could not be financially profitable—fraud (within the ledger) remains both detectable and unlikely. Further, because the value of the cryptocurrency itself is essentially tied to protection from this sort of attack, the public nature of the ledger ensures that if such an attack successfully occurred, it would be unlikely for any person to profit off of the resulting situation, as the cryptocurrency would no longer have a functional purpose (though likely this failure would mean that both the attacker and all previous entrants would find their holdings worthless). Where registration with the SEC provides a requirement for financial disclosures by the investment entity, and publication and filing of a prospectus disclosing the nature of business dealings and the variety of risk exposure endured by the concern, the functional equivalent within cryptocurrencies are the underlying software used to run and maintain the currency networks.¹⁷ Because this software must be available to users and miners to allow the cryptocurrency to function, this necessity for disclosure appears to be met. Where the prospectus and financial disclosures required by the SEC may provide standardized methods and criteria for disclosure which may be tailored so that any level of investor can comprehend it, the scope of information released appears to be superior in the cryptocurrency model. If it is true, however, that users are interacting in the cryptocurrency space without full knowledge of the underlying technology, or the underlying marketplace itself, then it is possible that this disclosure (while accurate and wide-ranging in scope) is not particularly useful. If users are unable or unlikely to engage with the available material, then what good is that information?

¹⁷ See 15 U.S.C. §§ 77j, 77aa, (2018).

Users of the cryptocurrency are prevented from double-spending or from retaining a cryptocurrency after it has been sent to another person by the verification of valid cryptocurrency exchange information on the ledger. Once the cryptocurrency has been created, whether a user stores that cryptocurrency in an electronic wallet or other storage, or sends it to another entity such as a cryptocurrency trading platform, neither the consortium which standardizes software updates, nor the individual miner-user, maintains a relationship to an investment, beyond their own continued ownership of any amount of the cryptocurrency. They are not engaged in a common enterprise and their profits are not intertwined. Engaging in mining by pledging computing power to the network does not incur any counterparty obligations akin to stock options or futures contracts, the miner who fails to “solve” the mining problem receives no rewards and loses their gamble. Where profitability occurs due to market forces, and not the work of the promoter, the Howey test’s third prong is not met.¹⁸ Therefore, cryptocurrencies can operate as meaningful forms of exchange, but a risk exists in the potential for those cryptocurrencies to undergo fluctuations in value as a result of market factors. While these changes in market forces can provide profitable opportunities for users of cryptocurrencies and investors in adjacent financial functions, and uses of cryptocurrencies may tend to resemble something closer to uses of financial instruments than to state currencies, their use as currency-equivalents is further blurred by the ways in which state currencies can be used as the basis for financial instruments.

Where the SEC has applied securities law to matters involving cryptocurrencies are in areas such as sales of investment securities (shares of stock) in exchange for cryptocurrency, raising funds for a cryptocurrency-based venture, and other schemes which do not raise questions under securities law which are novel due to the nature of cryptocurrency. Instead, these are areas where the SEC has long operated to ensure disclosure and registration in the investment market and the presence of cryptocurrency has only been incidental to the economic reality of the transactions involved.

While this may be sufficient to rule out certain cryptocurrencies as securities, as Alberts & Fry have with Bitcoin, it leaves open certain questions around the future of cryptocurrencies in a growing financial ecosystem.¹⁹ If the courts have relied on an economic reality test as part of their classification and evaluation of financial instruments and assets, then it remains necessary to look to an evolving economic reality within the cryptocurrency arena. The movement towards accepting cryptocurrencies as legal tender opens new areas for examination and presents new questions to legal scholars in this space.

¹⁸ *Noa v. Key Futures, Inc.*, 638 F.2d. 77 (9th Cir. 1980).

¹⁹ Alberts & Fry, *supra* note 4, at 21.

IV. The Current Regulatory Framework

Several regulatory agencies have made forays into interpreting cryptocurrencies within existing regulation. FinCEN stated in 2013 that cryptocurrency exchanges are not considered foreign currency exchanges under FinCEN's rules (instead including them in the term "money transmitters"), that cryptocurrencies are not currencies (by virtue of not being accepted as legal tender by the United States government or that of any other country), and miners of decentralized virtual currency who sell that currency for U.S. dollars are money transmitters.²⁰ Notably, congressional intent regarding money transmitters was "to combat the growing use of money transmitting businesses to transfer large amounts of the monetary proceeds of unlawful enterprises."²¹

With regard to Bitcoin, some impediments to regulation include the lack of a centralized administrator, semi-anonymity, and vulnerability to electronic theft from hacking.²² Another researcher notes that whereas most internet interactions fall under a complex web of service agreements between users and service providers, Bitcoin miners, users, and businesses have no such agreements with the larger Bitcoin network.²³ This may create a significantly different ecosystem of civil and tort liability than users may have come to expect from internet transactions. This could both cause risks where users are using Bitcoin without understanding this underlying difference, as well as in the attendant uncertainty that comes with common law remedies in a relatively young technological space. A survey by the Law Library of the U.S. Congress regarding cryptocurrency regulation worldwide shows a map of the world with much of the western world applying both tax laws and anti-money laundering

²⁰ DEPARTMENT OF THE TREASURY, FINANCIAL CRIMES ENFORCEMENT NETWORK, FIN-2013-G001, APPLICATION OF FINCEN'S REGULATIONS TO PERSONS ADMINISTERING, EXCHANGING, OR USING VIRTUAL CURRENCIES (2013).

²¹ United States v. Velastegui, 199 F.3d 590, 593 (2d Cir. 1999). See also United States v. Bah, 574 F.3d 106, 112 (2d Cir.2009) (citing H.R. REP. NO. 107-250(I), at 54 (2001)) 18 U.S.C. § 1960, prohibiting unlicensed money transmitting businesses, was created "to prevent the movement of funds in connection with drug dealing." See also S. REP. NO. 101-460, WL 201710 (1990), Congress considered the conversion of "street currency into monetary instruments" by criminal drug sellers.

²² Tu, K. V., & Meredith, M. W. *Rethinking virtual currency regulation in the Bitcoin age*. 90 WASH. L. REV., 271. (2015). Regarding electronic theft, because access to the private key necessary to send Bitcoin from one wallet to another is the functional equivalent to possession of the Bitcoins in that wallet, a person who gains access to a person's private key can quite easily transfer the Bitcoins to a wallet they control. While the theft may be detectable, as the public ledger can be used to track subsequent transactions, it will likely not be reversible, so the Bitcoins may functionally be lost forever.

²³ Kaplanov, N. *Nerdy Money: Bitcoin, the Private Digital Currency, and the Case Against its Regulation*. 25 LOY. CONSUMER L. REV., 111, 130. (2012).

& anti-terrorism financing laws to cryptocurrencies.²⁴ A similar report on tax treatment for mining operations, staking rewards, and airdrops or hard forks helps elucidate the variety of state decision-making with cryptocurrencies treated as an investment property (Denmark, Norway, Finland), capital asset (Australia), financial instrument (Germany), intangible asset (Luxembourg, Switzerland), intangible property (Singapore), investment capital (Sweden), property (New Zealand), financial asset (Venezuela), and a commodity (Canada).²⁵ Compounding this confluence of conflicting interpretations is the reality that cryptocurrency transactions may be occurring in worldwide markets amongst users who have different expectations regarding the legal reality of their economic transactions.

In the United States, the State of Kansas has determined that because cryptocurrency does not have intrinsic value (they are not “backed” or exchangeable at a fixed rate for something with value), a person sending cryptocurrencies to another is not engaging in money transmission (so they are not required to register with the state as a licensed money transmitter).²⁶ Likewise, Texas has agreed with FinCEN that cryptocurrencies are not currencies as they are not issued by states.²⁷ The Eastern District Court of Texas, however, when determining if Bitcoin payments into an investment trust counted as “investment of money” under the *Howey* test, considered that because Bitcoin could “be exchanged for conventional currencies...Bitcoin is a currency or form of money.”²⁸

The District Court of the Eastern District of New York, which considered

²⁴ Law Library Of Congress, U. S. G. L. R. D. *Regulation of Cryptocurrency Around the World*. Washington, D.C.: The Law Library of Congress, Global Legal Research Directorate. [Pdf] <https://www.loc.gov/item/2021687419/>. (2021).

²⁵ Zhang, L., et al. Law Library Of Congress, U. S. G. L. R. D. *Taxation of Cryptocurrency Block Rewards in Selected Jurisdictions*. [Washington, D.C.: The Law Library of Congress, Global Legal Research Directorate] [Pdf] <https://www.loc.gov/item/2021666100/>. (2021)

²⁶ KANSAS OFFICE OF THE STATE BANK COMMISSIONER, MT 2014-01, REGULATORY TREATMENT OF VIRTUAL CURRENCIES UNDER THE KANSAS MONEY TRANSMITTER ACT (2014)

²⁷ TEXAS DEPARTMENT OF BANKING, SUPERVISORY MEMORANDUM - 1037 (2014). (revised as TEXAS DEPARTMENT OF BANKING, SUPERVISORY MEMORANDUM - 1037 (2019) making the same determination interpreting the term “country of issuance” as stated in Texas Financial Code § 151.501(b)(1) (defining currency using identical language as 31 C.F.R. § 1010.100(m)(2022)). In both versions, the Texas Department of Banking interpreted “country of issuance” to exclude cryptocurrencies from the definition of “currency.”

²⁸ SEC v. Shavers, No. 4:13-cv-416, 2013 (E.D. Tex. Aug. 6, 2013). *Shavers* and the Texas Department of Banking memorandum (*supra* note 27) are not necessarily opposed. *Shavers* held that “Bitcoin is a currency or form of money” within the *Howey* test for whether a thing is a “security,” which concerns the authority of the Securities and Exchange Commission. The Department of Banking was concerned with Bitcoin more generally as a “currency” under the Bank Secrets Act, which concerns the scope and manner of anti-money laundering statutes.

virtual currencies to be “commodities,” noted the following potential regulatory alternatives open to Congress: (1) no regulation, (2) regulation through criminal proceedings or civil suit of fraud, (3) regulation by the Commodity Futures Trading Commission (CFTC), (4) regulation by SEC, (5) regulation by FinCEN, (6) regulation by IRS, (7) self-policing by private exchanges, (8) regulation by individual state entities, or (9) some combination of the above.²⁹

Cryptocurrencies have already been subjects to various criminal and civil proceedings, but because of the lack of use of cryptocurrency as the main transactional currency for any large institutions or businesses, the type of complex litigation which would create the scaffolding of a future framework is largely unavailable.³⁰ The litigation that is available tends instead to cover criminal prosecutions or civil actions between businesses heavily involved in cryptocurrency operations. Cryptocurrencies are controlled by whoever has access to the private keys associated with that tranche of cryptocurrency. Thus, even though cryptocurrencies are controlled through software, their possession operates largely similar to tangible property. For these cryptocurrencies, control over the property cannot be restored through legal fiat or court decree, but rather could only be reversed through the transfer of an appropriate amount to a new wallet of the rightful owner (replacement in the original wallet with the compromised private key would not provide security against the same attacker, if they had recorded the key).

In forfeiture proceedings, courts have claimed *in rem* jurisdiction over cryptocurrency as property subject to seizure.³¹ If cryptocurrencies cannot be said to be sited physically within the jurisdiction of a court, it may be more appropriate to apply a *quasi in rem* status, which would require “minimum contacts” between the property and the jurisdiction.³² This may present special difficulties for cryptocurrency tranches where cryptocurrency private keys are held in a distributed way, such as by splitting keys between multiple jurisdictions such that coordination with a certain number of the actors (potentially in different jurisdictions) together is required to recreate the actual private key. A particular difficulty that arises in serving process with this arrangement is that many of the partial private keys may need to be located before process can be properly effectuated. That being said, forum-shopping

²⁹ Commodity Futures Trading Commission v. My Big Coin Pay, 334 F. Supp. 3d 492 (D. Mass. 2018).

³⁰ Raskin, M. I. *Realm of the Coin: Bitcoin and Civil Procedure*. 20 FORDHAM J. CORP. & FIN. L., 969, 979. (2014).

³¹ United States v. 50.44 BITCOINS, Civil Action No. ELH-15-3692 (D. Md. May 31, 2016). In “Silk Road” case see, Ulbricht, *Second Post-Complaint Protective Order*, No. 13 Civ. 6919 (JPO), ECF (2013).

³² Shaffer v. Heitner, 433 U.S. 186, 216-217. 97 S. Ct. 2569, 53 L. Ed. 2d 683 (1977)

and the design of new forms of contracts or technological advances are not, simply by the possibility that they create difficulty in effecting process, reasons to disregard property owners' due process rights.

CFTC's authority covers "accounts, agreements... and transactions involving swaps or contracts of sale of a commodity for future delivery."³³ The District Court of E.D. of New York held that virtual currencies are commodities by common usage, because they are used as a store of value, and because they are used for monetary exchange.³⁴ CFTC itself regards virtual currencies as "commodities under the Commodity Exchange Act (CEA)" (CEA governs the CFTC).³⁵ Thus (as the regulator's name suggests), where cryptocurrencies are treated as commodities they may be regulated by the CFTC where the exchange involves a futures contract. For cryptocurrency businesses, the applicability of the CFTC will turn upon whether they are operating using futures contracts or "spot price" contracts. Futures contracts regard (and quote the price of) acquiring a commodity at a future point in time. Spot price contracts regard (and quote the price of) acquiring a commodity continuously in real time. Further, the CFTC has taken numerous enforcement actions against bad actors in the cryptocurrency derivatives markets and warns businesses engaged in this activity that (due to the technical ability to near-instantaneously deliver cryptocurrencies to buyers upon sale) the 28-day safe harbor for actual delivery of commodities may not apply to cryptocurrency trading.³⁶ Thus, cryptocurrency businesses and exchanges offering cryptocurrency derivatives and hoping to insulate themselves from the risk associated with CFTC action may likely require users to first deposit cryptocurrencies with the exchange or business and provide consent to garnish that cryptocurrency deposit if needed to settle an account.

SEC's authority regarding securities depends, in part, on the economic reality of users' interactions. Thus, the head SEC's corporate finance division stated: "[When] purchasers no longer have expectation of managerial stewardship from a third party, a coin is not a security."³⁷ In other words, when

³³ 7 U.S.C. § 2(a)(1)(A)

³⁴ For "common usage" see Mitchell Prentis, *Digital Metal: Regulating Bitcoin as a Commodity*, 66 CASE W. RES. L. REV. 609, 626 (2015). For "a type of monetary exchange" see *Id.* at 628-29. For "store of value" see Jeff Currie, *Bullion Beats bitcoin, Not Bitcoin*, GOLDMAN SACHS GLOBAL INVESTMENT RESEARCH, (Mar. 11, 2014).

³⁵ Press Release, Commodity Futures Trading Commission, *CFTC Launches Virtual Currency Resource Web Page*, (Dec. 15, 2017) <https://www.cftc.gov/PressRoom/PressReleases/7665-17>.

³⁶ Proposed Interpretation on Retail Commodity Transactions Involving Virtual Currency, 82 Fed. Reg. 60,335 (Dec. 20, 2017).

³⁷ Michael Larkin, *SEC Looks at This When Deciding if a Cryptocurrency Will Be Regulated*, INVESTORS. (Jun. 14, 2018) <http://www.investors.com/news/sec-explains-cryptocurrency-securityasset-ico-regulation/>, (quoting William Hinman, head of the SEC's division of

users are interacting with cryptocurrencies as property, retaining personal control over the currency, and engaging with the currency directly (as opposed to engaging with a financial instrument based on that underlying currency), then they may not fall under the purview of securities law.

FinCEN carries out several roles as the financial intelligence unit of the U.S. Government. Established under 31 U.S.C. § 310, it maintains “a government-wide data access service” regarding financial data, disseminates information, and assists law enforcement in such endeavors as monitoring “foreign currency transactions... monetary instruments, and suspicious activities” identifying “possible criminal activity” and supports anti-money laundering activity.³⁸ FinCEN is tasked with enforcing compliance with the Bank Secrecy Act requirements regarding financial reporting by financial institutions on their own customers’ transactions.³⁹

Action by FinCEN can be catastrophic at times; following a Treasury notice that a financial institution operated as a “primary money laundering concern” per 31 U.S.C. § 5318A, ⁴⁰ “U.S. banks holding correspondent accounts on behalf of FBME terminated their relationships with the Bank, and other banks abroad held FBME’s U.S. dollar correspondent accounts in suspension pending imposition of the Final Rule.”⁴¹ Several United Nations conventions ensure that the money laundering statutes are enforced in large parts of the global financial system, prompting FBME to characterize the Notice of Finding as “effectively excommunicating FBME from the global financial system.”⁴² In making these considerations, however, the Secretary of the Treasury must consider the extent of the money laundering, the extent of legitimate business, and guarding against financial crimes.⁴³ Thus, as

corporate finance).

³⁸ 31 U.S.C. § 310

³⁹ TREASURY ORDER 180-01, 67 Fed. Reg. 64,697 (October 21, 2002). See purpose and rationale, 31 U.S.C. §§ 5311-5314. For monetary instruments and money transmitting businesses, see 31 §§ U.S.C. 5316-5330. For coins and currency receipts, see 31 § U.S.C. 5331. For cash smuggling, see 31 § U.S.C. 5332. For records retention requirements, see 12 U.S.C. § 1829b. For laundering of instruments, see 18 U.S.C. § 1956. For crime of money laundering, see 18 U.S.C. § 1957.

⁴⁰ 31 U.S.C. § 5318A

⁴¹ *FBME Bank Ltd. v. Lew*, 125 F. Supp. 3d 109, 113 (D.D.C. 2015).

⁴² *FBME Bank Ltd. v. Lew*. See generally COMMONWEALTH SECRETARIAT. MODEL PROVISIONS ON MONEY LAUNDERING, TERRORIST FINANCING, PREVENTIVE MEASURES AND PROCEEDS OF CRIME (2016). Regarding terrorism financing, see G.A. RES. 54/109 (9 December 1999), <https://treaties.un.org/doc/db/Terrorism/english-18-11.pdf>. Regarding firearms and human trafficking, see G.A. RES. 55/25, (15 November 2000) https://treaties.un.org/doc/Treaties/2000/11/20001115%2011-11%20AM/Ch_XVIII_12p.pdf.

⁴³ 31 U.S.C. § 5318A (c)(2)(B)

cryptocurrency transactions become legitimized, they likely become more protected as a whole from sanction by FinCEN. Likewise, for exchanges and cryptocurrency businesses which operate largely or in whole to facilitate legitimate business transactions, they may also gain some protection from FinCEN sanction, though as money transmitting businesses, they must comply with anti-money laundering regulations, including record-keeping and monitoring for suspicious transactions. Similarly, a person who engages in money laundering, but uses a cryptocurrency business to conduct that money laundering, is still subject to anti-money laundering statutes and possible criminal sanction.⁴⁴

With regard to countries which may adopt cryptocurrencies as more regular parts of their economies, the FinCEN guidance available provides an important caveat. In its 2013 guidance on virtual currencies the Agency noted that currency for the purposes of FinCEN enforcement is “the coin and paper money of the United States or of any other country that [i] is designated as legal tender and that [ii] circulates and [iii] is customarily used and accepted as a medium of exchange in the country of issuance.”⁴⁵ These three prongs are likely not currently met by El Salvador’s treatment of Bitcoin. While Bitcoin may certainly can be said to “circulate,” and may eventually be “accepted” in the country, it is not a “country of issuance” and Bitcoin cannot be said to be “coin” or “paper money” of that country. Thus, even if it is accepted as legal tender by El Salvador, it would not be considered “real currency” for the purposes of 31 C.F.R. § 1010.100(m)(2022). Key here is a central difference between traditional currencies and non-state virtual currencies which appears to extend beyond FinCEN regulations. Even if a country accepts a virtual currency as acceptable for payment in that country, for government debt, and even requires acceptance by private merchants and businesses, where the

⁴⁴ United States v. Ulbricht, 31 F. Supp. 3d 540 (S.D.N.Y. 2014). Particularly interesting in this trial of the developer who created the website The Silk Road as a place for criminal transactions to be conducted pseudo-anonymously with payment in Bitcoin is the court’s openness to the idea that a software developer may have, by creating a website to facilitate illegal activity, engaged in a criminal conspiracy with those others who used the website, even if they did not communicate or coordinate directly with each other. It may be for the best then, that “Satoshi Nakamoto” is unknown as the court claimed that regarding creating software that facilitates criminal activity: “Automation is effected through a human design; here, Ulbricht is alleged to have been the designer of Silk Road, and as a matter of law, that is sufficient.” Though, it would be up to the courts to determine if simply downloading the software to run and exchange Bitcoin, in the absence of any software agreements, would constitute knowing entrance into a conspiracy. See United States v. Lorenzo, 534 F.3d 153, 161 (2d Cir. 2008). For more on the concept of cryptocurrency transactions as a facilitator for criminality, see Nolasco Braaten, C., & Vaughn, M. S. *Convenience Theory of Cryptocurrency Crime: A Content Analysis of US Federal Court Decisions*. *DEVIANT BEHAVIOR*, 42(8), 958-978. (2021).

⁴⁵DEPARTMENT OF THE TREASURY, *supra* note 20, quoting 31 C.F.R. § 1010.100(m) (2012).

country does not maintain control over the currency and does not issue it or otherwise maintain the means to designate its value (such as by setting the exchange rate), it is really only using that currency. This, in essence, is what leaves the underlying virtual currency a commodity (or asset, or property) for the purposes of these various regulations and not a “real currency.” A different class of virtual currencies may be state-regulated or state-controlled virtual currencies. This can variously involve virtual currencies issued by states with exchange rates set by the states and backed either by other assets (such as rare metal reserves) or with floating exchange rates (fiat money) which is largely a digital counterpart to hard money (both coins and paper) issued by states. These digital state currencies largely do not vary in their substance or economic reality from the previously existing “real currency” of states. In fact, even when using something such as blockchain technology to authorize or verify transactions the underlying economic reality of the state-controlled virtual currency remains the same as the digital Federal Reserve notes that make up much of the current market in U.S dollars. Likewise, proposals surrounding central bank digital currencies (CBDCs) generally have not concerned a different economic reality than the existing digital versions of “real currency” used by governments. Instead, they focus around the ability to more closely manipulate or monitor transactions such that governments could maintain more control over their currencies. Where non-state virtual currencies prevent this type of control from occurring (even by the initial designers, users, or maintainers of the currency network), it is unlikely that FinCEN regulations would apply beyond those means stated in FIN-2013-G001, which “addresses ‘convertible’ virtual currency...[which] either has an equivalent value in real currency, or acts as a substitute for real currency.”

Per the IRS, cryptocurrencies that can be exchanged for a dollar amount are property, and as such may result in taxable events when disposed of a gain or loss.⁴⁶ The cost basis paid for cryptocurrency establishes “the fair market value of the currency in U.S. dollars as of the date of receipt.”⁴⁷ The gain or loss is the difference between the adjusted cost-basis (determined by 26 U.S.C. § 1012, and adjusted according to 26 U.S.C. § 1016) and the proceeds realized on sale, in accordance with the relevant section of Title 26.⁴⁸ Further, 26 U.S.C. § 1012 determines cost basis per the relevant subchapter, 26 U.S.C. Subchapter

⁴⁶ News Release, Internal Revenue Service, *IRS Virtual Currency Guidance: Virtual Currency is Treated as Property for U.S. Federal Tax Purposes; General Rules for Property Transactions Apply*. IR-2014-36 (Mar. 25, 2014)

⁴⁷ Internal Revenue Service Notice 2014-21, 2014-16 I.R.B. 938 (April 14, 2014).

⁴⁸ 26 U.S.C. § 1001(a) “The gain from the sale or other disposition of property shall be the excess of the amount realized therefrom over the adjusted basis provided in section 1011 for determining gain, and the loss shall be the excess of the adjusted basis provided in such section for determining loss over the amount realized.”

C for corporate distributions and adjustments, 26 U.S.C. Subchapter K for partners and partnerships, and 26 U.S.C. Subchapter P for capital gains and losses. Additionally, wage compensation in virtual currency is subject to taxation as regular income at the fair market value in U.S. dollars of the virtual currency on the date the virtual currency is received.⁴⁹ The IRS taxes capital gains and losses on virtual currencies held as capital assets, and ordinary gains and losses on virtual currencies not held as capital assets.⁵⁰ At least one researcher had suggested that the IRS treatment of cryptocurrencies as property and the SEC's lack of clear treatment of cryptocurrencies as securities left open the possibility for use of 26 U.S.C. § 1031 like-kind exchanges between cryptocurrencies for transactions, though that possibility is no longer relevant after the Tax Cuts and Jobs Act of 2017 disallowed like-kind exchanges of personal property at the end of that year.⁵¹ The IRS has broad authority to issue summons under 26 U.S.C. § 7601.⁵² Once the IRS presents a *prima facie* case for the summons, often by a sworn declaration from a revenue agent that the burden is met, the subsequent "burden on the taxpayer to disprove the IRS's assertion is 'heavy.'"⁵³ Where the IRS submitted a summons for a taxpayer's cryptocurrency transactions through the exchange Bitstamp, the exchange was expected to furnish the IRS with transaction information, including public but not private encryption keys.⁵⁴ Separately, a broader IRS summons was granted in 2016 in which the IRS requested and received general transaction information and identity information on all U.S. taxpayers transacting with the exchange Coinbase between 2013-2015.⁵⁵ At least one scholar described this action as perceived by legal professionals as a "fishing expedition" which demonstrated little understanding of the underlying public ledger technology.⁵⁶ This action, however, was part of a multi-year effort on the part of IRS to clamp down on tax evasion through enforcement action, particularly against

⁴⁹ Internal Revenue Service, *supra* note 46, at 4-5. *See also*, IRS PUBLICATION 525, TAXABLE AND NONTAXABLE INCOME, under miscellaneous income from exchanges of property or services.

⁵⁰ Internal Revenue Service, *supra* note 46, at 3-4. *See* 26 U.S.C. § 1221 for a definition of capital assets and exclusions from the definition. For cryptocurrency holdings held by an individual for a non-business reason, gains or losses incurred between acquisition and disposition will likely be treated as capital gains.

⁵¹ Cole, E. *Cryptocurrency and the 1031 Like Kind Exchange*. 10 HASTINGS SCI. & TECH. LJ, 75. (2019); *see* Act effective Dec. 31, 2017, Pub. L. No. 115-97, 131 Stat. 2054.

⁵² *United States v. Euge*, 444 U.S. 707, 100 S. Ct. 874, 63 L. Ed. 2d 141 (1980).

⁵³ *Zietzke v. United States*, 426 F. Supp. 3d 758 (W.D. Wash. 2019).

⁵⁴ *Id.* Dkt. No. 12, at 16-17.

⁵⁵ United States' Memorandum in Support of *Ex Parte* Petition for Leave to Serve John Doe Summons at 7, *In re Tax Liabs. Of Doe*, No. 3:16-cv-06658-JSC, 2016 U.S. Dist. LEXIS 184200 (N.D. Cal. Nov. 30, 2016)

⁵⁶ Elliott, A. *Collection of Cryptocurrency Customer-Information: Tax Enforcement Mechanism or Invasion of Privacy*. 16 DUKE L. & TECH. REV., 1. (2017).

facilitating businesses.⁵⁷ A 2009 action against Swiss bank UBS was followed by further subpoenas to financial businesses for transaction information regarding their “John Doe” clients, which ultimately led to action against the businesses themselves.⁵⁸

A further consequence of the IRS’s classification of cryptocurrencies as property (for the purposes of taxation), is that taxation of property (such as unrealized gains in the value of held cryptocurrency) requires apportionment under the Constitution.⁵⁹ The function of the IRS’s ruling that only realized gains are taxed (taxes on disposal), is to define this tax as not a direct tax, and therefore not one of those forms subject to apportionment concerns.

Self-policing amongst cryptocurrency exchanges could possibly occur through contractual service agreements signed by users of software platforms. Theoretically, the argument could be made that if these contracts and their enforcement are sufficient to provide a valuable service to cryptocurrency users, it may induce users to migrate towards exchanges and away from operating offline or local storage wallets. For those users operating outside of this secondary cryptocurrency service industry, it is difficult to see how contract law could provide any redress for users who lose their cryptocurrency (such as through local file corruption, deletion, or damage) or those who are subject to peer-to-peer fraud from a user that they cannot easily identify or locate to bring civil actions against. The scope of contractual service agreements is necessarily limited by the relationship of the parties to the agreement. The 11th Circuit Court of Appeals held that the cryptocurrency exchange business Coinbase, Inc. (a licensed money transmitter subject to FinCEN regulation) could not enforce its arbitration clause under the equitable estoppel doctrine upon a defendant seeking suit for damages incurred by one of their clients who used the exchange to convert stolen cryptocurrency.⁶⁰ In these cases, insurance against losses or proper due diligence may be required, though these would likely preclude complete anonymity. Those operating within anonymous markets and seeking to operate at arms-length may have to abide by the simple and straightforward

⁵⁷ McGill, D. H., Sauter, B. J., & Barnes, B. D. *Cryptocurrency Is Borderless—But Still Within the Grip of US Regulators*. INTERNATIONAL LAW PRACTICUM, 31(1), 11. (2018).

⁵⁸ Klein, Michael. *IRS Expands Use of Legal Tools Against Tax Evaders*. CAYMAN COMPASS (May 8, 2015), <https://www.caymancompass.com/2015/05/08/irs-expands-use-of-legal-tools-against-tax-evaders/>. Many of these enforcement actions were charged as conspiracy to defraud the Internal Revenue Service, *see e.g.*, United States v. Klein, 247 F.2d 908 (2d Cir. 1957).

⁵⁹ Eisner v. Macomber, 252 U.S. 189, 40 S. Ct. 189, 64 L. Ed. 521 (1920). For a more in-depth discussion of apportionment in relation to direct taxes and the various ways in which this requirement has been and continues to be interpreted to fit prevailing needs, see Johnson, C. H. *Apportionment of Direct Taxes: The Foul-Up in the Core of the Constitution*. 7 WM. & MARY BILL RTS. J., 1. (1998).

⁶⁰ Leidel v. Coinbase, Inc., No. 17-12728, Non-Argument Calendar (11th Cir. Apr. 23, 2018).

reminder that cryptocurrency transactions are generally final and irreversible, so due diligence would be prudent prior to releasing funds.

Further, some have argued that cryptocurrencies themselves (and the underlying software model) are forms of contracts. The phenomenon of “smart-contracts” in cryptocurrency is a form of distributing and fulfilling contractual obligations built into the software of a cryptographic medium. A person can use the underlying software platform provided by “smart-contract” technology to ensure that contracts have been fulfilled before providing payment, and that contracts have been properly filled. This offers a potential way for cryptocurrency contracts to fulfill some of the basic goals of contract law as a whole, and potentially removes the need for clearinghouses or financial escrow to maintain integrity in financial contracts.⁶¹ Essentially, basic cryptocurrency software ensures that the “contract” to maintain the integrity of the distributed network is upheld, as currency holders validate transactions and track compliance through consensus adoption of any changes to the software. This potential function of cryptocurrencies as contracts themselves highlights a way in which their use has raised issues for regulators attempting to ensure appropriate disclosures (as with financial instruments). Where a cryptocurrency is a form of contract, the contract may exist in a form (such as “high level” programming language, assembly language, or machine language) which is sufficiently far removed from natural language for a person to reasonably understand it without the appropriate decoding software.⁶² Might a person attempt to renege on a cryptocurrency purchase by claiming that their software malfunctioned, or went rogue, or that the purchase was the result of a computer bug?

Another unique aspect of the cryptocurrency space is the process of encoding information into the blockchain or appending additional information onto minute quantities of cryptocurrencies such that the currency, while still retaining its value as a portion of cryptocurrency, also becomes a representation of another (potentially valuable) object. For example, this method can be used to provide a digital representation of a real-world stock or bond, such that the analogous real-world item is far more valuable than the digital cryptocurrency on which it is represented.⁶³

⁶¹ Szczerbowski, J. J. *Place of Smart Contracts in Civil Law. A Few Comments on Form and Interpretation*. Proceedings of the 12th Annual International Scientific Conference New Trends. (Nov. 2017).

⁶² *Id.* at 6.

⁶³ Houck, D. *Bitcoin: Reacting to Money with Non-Money Attributes*. 1 GEO. L. TECH. REV., 371, 384-385. (2016).

State money transmitter laws exist to provide redress to consumers of money transmitter businesses for nonperformance or financial loss.⁶⁴ Overall state money transmitter licensure requirements provide some protections for consumers to know that these businesses maintain some ability to pay their debts and financial soundness as defined by that state, further the requirements provide record-keeping regulations that may aid a consumer or regulatory agency if the money transmitter business fails to provide proper service.⁶⁵ Because money-transmitter laws are functionally concerned with the performance of exchange contracts dealing with U.S currency, exchanges that deal only with virtual currencies, but do not provide the capability to exchange virtual currencies for U.S currency, may not be subject to money transmitting license requirements. The State of New York issued wide-ranging cryptocurrency regulations including requiring all new issuers or creators of cryptocurrency to register with the state.⁶⁶

Further avenues for regulation under current legislation include anti-trust law.⁶⁷ Inherent to the value of many cryptocurrencies is the underlying software which requires proof-of-work (or some other consensus form of authentication) before validating a block and adding it to the blockchain, making a certain framework of limitations (such as hard caps on the ultimate number of coins that can ever be mined, or the speed at which increasing complexity is required for mining new blocks) which new users of the cryptocurrency adopt. These are not technological limitations, but rather the consensus decision of those using the cryptocurrency software.⁶⁸ If the users (through their choices of software) adopt a new consensus, they can shift their existing cryptocurrency to a new group consensus. Because cryptocurrency users have an incentive to maintain a common consensus and not to split their users between different competing groups (the value of currencies is largely derived from the network effects of a number of people willing to use and accept them) users are encouraged to build consensus rather than create their own path. Splits in blockchains do occur, often called “forks” where the split between two versions of a blockchain exists, both branching off of one older version. Because the chain represents all previous transactions involving that cryptocurrency (essentially a validation of progeny), during “hard” forks when a cryptocurrency community splits into two consensus models, cryptocurrency that is on one side of the fork can no longer move back to the other side of the

⁶⁴ Tu, K. V., & Meredith, M. W., *supra* note 22, at 331.

⁶⁵ Tu, K. V., & Meredith, M. W., *supra* note 22, at 332.

⁶⁶ See N.Y. FIN. SERV. LAW § 200 (McKinney 2022)

⁶⁷ For a look at possible legal issues around anti-trust as a method for redress by cryptocurrency users during a hard-fork, see Button, C. D. *The Forking Phenomenon and the Future of Cryptocurrency in the Law*. 19 UIC REV. INTELL. PROP. L., 1, 20-25. (2019).

⁶⁸ Østbye, P. *The Case for a 21 Million Bitcoin Conspiracy*. SSRN 3136044, at 4. (2018).

fork, the fork is “hard” in that it is irreversible without destroying the integrity of the blockchain.

In considering cryptocurrency “caps” it can be difficult to make an argument that this is a form of antitrust conspiracy coordination for a few reasons. First, cryptocurrencies are only artificially scarce, thus (similar to company stock) infinite issuance would result in an infinite dilution of value, and more importantly, the value of the cryptocurrency is largely a function of the “scarcity” itself. Artificial constraints on the supply of commodities by cartels are classic forms of antitrust conspiracy to manipulate markets. But can cryptocurrencies be considered commodities for the purpose of antitrust? The CFTC only claimed that cryptocurrency could be considered commodities within the narrow question of whether it could regulate its futures markets. With regards to antitrust, the restriction of supply of cryptocurrencies may only become relevant in a situation where a user or consortium of users controls a large portion of outstanding (and still accessible) cryptocurrencies such that they are able to “force” changes to the consensus of users. Even in these cases, the possibility of a “fork” to a new consensus model provides a possibility for users to exert some control over the existing supply and check the power of market manipulators, if they become aware of such a phenomenon.

In antitrust litigation, plaintiffs must have suffered direct harm.⁶⁹ While anti-trust law generally provides relief from anticompetitive behavior, its concern is mainly with how anticompetitive behavior affects consumers, such as by constraining supply.⁷⁰ Thus hard forks are unlikely to be fruitful areas for antitrust litigation, as they generally provide for increased competition. As the fork occurs, each cohort competes for a greater share of users. Miners tend to come online and compete for access to the rewards of joining each side of the fork. Users compete to get other users to use each side of the fork. In *United American Corp v. Bitmain, Inc.*, plaintiffs claimed that the defendants had engaged in Sherman Act violations by restraining trade or commerce, but the court dismissed the complaint for failing to allege an agreement, holding that it was fatal to the argument the complaint did not allege (and facts did not support)

⁶⁹ 15 U.S.C. 15 (a) states “any person who shall be injured in his business or property by reason of anything forbidden in the antitrust laws may sue therefor in any district court of the United States in the district in which the defendant resides or is found or has an agent, without respect to the amount in controversy, and shall recover threefold the damages by him sustained, and the cost of suit, including a reasonable attorney’s fee.” See *Illinois Brick Co. v. Illinois*, 431 U.S. 720, 97 S. Ct. 2061, 52 L. Ed. 2d 707 (1977) (holding that in antitrust cases harm must be direct for a plaintiff to have standing).

⁷⁰ Stylianou, K. *What Can the First Blockchain Antitrust Case Teach us About the Crypto-Economy*. HARV J LAW TECHNOL DIGEST. <https://jolt.law.harvard.edu/digest/what-can-the-first-blockchain-antitrust-case-teach-us-about-the-crypto-economy>. (2019).

that Defendants all agreed to manipulate the market.⁷¹ A difficulty of antitrust litigation in these disputes are that while control over individual nodes (computers running mining software) and decisions by users regarding their own personal holdings of certain coins (each side of the fork) as an aggregate does have an effect on the value of the holdings of those who make contra decisions during the fork, this is the normal interaction of market forces, and is in fact, a mark of competition. Because antitrust litigation is generally concerned with the consumer landscape as a whole, the fork only attracts more suppliers (both those running mining software and those business providing services engaging each side of the fork) and thus liberate rather than restrain trade. Overall, during a “fork” competition increases and anticompetitive behavior becomes unlikely, making antitrust litigation unnecessary or unfit for this situation.

While those cryptocurrencies which utilize a decentralized, public ledger system such as that described in the original 2008 Nakamoto paper may be unlikely areas for antitrust litigation, cryptocurrencies which use “permissioned” systems may be more likely targets. In permissioned blockchain systems, certain trusted nodes are privileged to be the only ones capable of taking certain actions with regard to the software. “In cases where trusted nodes have full control over the process that updates and maintains the shared data, permissioned blockchains are very similar to the distributed databases companies have been using for decades.”⁷² These cases are sometimes referred to as “private blockchains” because they operate more similarly to a privately operated token: The consortium or users with privileged access act as stewards of the program, but the value of the currency inherently depends on trust in the privileged users; likewise, the non-privileged users themselves have less control over the currency which they hold, because the nature of that currency is connected to the decisions of the privileged users. Because permissioned blockchains are closer to earlier digital token technology, their use likely produces simple analogues to those legal standards. With regard to permissionless blockchain, the difficulties of applying existing antitrust philosophies may be impossible or impractical.⁷³ Permissionless blockchain currencies appear to be different enough in their internal governance that they likely are outside the bounds of antitrust issues. Overall, the purpose of permissionless blockchain technologies is to give users confidence that their

⁷¹ *United American Corp. v. Bitmain, Inc.*, 530 F. Supp. 3d 1241 (S.D. Fla. 2021).

⁷² Catalini, C., & Tucker, C. *Antitrust and Costless Verification: An Optimistic and a Pessimistic View of the Implications of Blockchain Technology*. SSRN ELECTRONIC JOURNAL, 4. (2018).

⁷³ For a discussion on the ways in which blockchain technologies appear to inherently solve antitrust issues, see Schrepel, T. *Is Blockchain the Death of Antitrust Law? The Blockchain Antitrust Paradox*. SSRN ELECTRONIC JOURNAL, (2018) doi:10.2139/ssrn.3193576.

currencies are not being manipulated by any users. By distributing decision-making (through consensus), building in protections against manipulation (such as computational logic), public ledgers, and data immutability (new information is appended to old information, rather than overwriting it), blockchain technologies largely render antitrust law unnecessary; where blockchain technologies focus on peer-to-peer transmission and pseudonymity, they may render adequate enforcement impractical or impossible.

This leaves us with a unique network of legal claims from various regulatory agencies regarding the status of cryptocurrencies and the authority of these regulators with respect to them. To a casual observer, this may appear to be a confusing jumble of indirect legal states. It may be correct that such an environment, with a patchwork of crisscrossing regulatory authorities can create a confusing environment for new businesses or entrants trying to familiarize themselves with what remains legally possible, and of course, legally profitable. An observer might consider the current regulatory environment to be quite similar to the “no regulation” posture, and the uncertainty surrounding the current regime may have similar drawbacks in terms of the constraints it puts on future cryptocurrency developments as well as making financing scarce in an unsteady legal environment.⁷⁴ But the regulatory realist might remark that this patchwork reveals the nature of a cautious (and possibly prudent) governance; the financial realist might remark that the risk correctly reflects uncertainty in an emerging space. In short, each relevant regulatory agency defines their relationship to cryptocurrency in a narrow way, but this relationship is reflective of their own narrow authority and expertise. For the IRS, cryptocurrencies are simply property, meaning they can be subject to taxable events on disposal (or at “creation” for miners). For the CFTC, they are commodities, but only in the context of regulating futures markets that derive from their commodity form. More directly, the CFTC has authority over futures markets, including cryptocurrency futures. To the SEC, they are not generally securities in themselves, but financial instruments or investment contracts (i.e., “securities”) derived from cryptocurrencies, naturally are under the SEC’s purview. Per FinCEN, cryptocurrencies are not necessarily “money,” though businesses which operate exchanges of money and cryptocurrency must adhere to anti-money-laundering regulations. For state agencies regulating money transmission, the nature of the money transmission is operative. Regardless of whether cryptocurrencies are property, commodities, money, currency or something else, when it is used by a business to transmit money then that business is engaging in money transmission. When an individual buys or sells a cryptocurrency from another individual, they are

⁷⁴ Jeans, E. D. *Funny Money or the Fall of Fiat: Bitcoin and Forward-Facing Virtual Currency Regulation*. 13 COLO. TECH. LJ, 99, 121-126. (2015).

likely not engaging in money transmitting business (thus, not required to be licensed as such), because the nature of the transaction is not purposed of transferring U.S. dollars from one place to another. Rather, they are trading a thing for cash, engaging in the normal barter and exchange of everyday financial interaction. If, on the other hand, a business consistently provides prices for money (i.e., U.S. dollars) in exchange for cryptocurrency, such that the cryptocurrency cannot be said to meaningfully have a purpose beyond its value in exchanging money, then the business is essentially a money transmitting business, subject to licensing requirements and anti-money laundering statutes.

A. Legal Tender

Black's Law Dictionary defines *legal tender* as "The money (bills and coins) approved in a country for the payment of debts, the purchase of goods, and other exchanges for value."⁷⁵ The District Court of the Southern District of New York held that "Bitcoin clearly qualifies as 'money.'"⁷⁶

Because a currency can become legal tender with the approval of a country, the legal tender decisions of countries may have spillover effects in other markets. The IRS Notice regarding cryptocurrency specifically noted as part of its finding that virtual currencies do "not have legal tender status in any jurisdiction."⁷⁷ While that was true at the time of the Notice, it may not be true anymore. The country of El Salvador began accepting Bitcoin as legal tender for all transactions in the country (with the exchange rate determined by the market) on September 7, 2021.⁷⁸

While 31 U.S.C. § 5103 states "United States coins and currency...are legal tender for all debts, public charges, taxes, and dues," the Treasury department does not interpret this to mean that private businesses or individuals need to accept any U.S. currency for payment, noting that no such law requires businesses to accept all U.S. currency.⁷⁹ Thus, businesses which prohibit payment in small coins or place limitations on payment with large bills may do so. Though 31 U.S.C. § 5103 provides that U.S. currency is legal tender, that does not preclude other things also being legal tender. It does not appear that any cryptocurrency can currently be considered a U.S. coin or currency, so we

⁷⁵ *Legal Tender*, Black's Law Dictionary (9th ed. 2009).

⁷⁶ *United States v. Faiella*, 39 F. Supp. 3d 544 (S.D.N.Y. 2014).

⁷⁷ Internal Revenue Service, *supra* note 47, at 1.

⁷⁸ Legislative Assembly of El Salvador, *supra* note 1.

⁷⁹ U.S. Department of the Treasury. *Legal Tender Status*. <https://www.treasury.gov/resource-center/faqs/Currency/Pages/legal-tender.aspx>. (2011, January 4).

will need to go beyond this statute to understand the matter.

Article 1, Section 10 of the Constitution states “No state shall...make anything but gold and silver coin a tender in payment of debts,” indicating that any state scheme administering legal tender status to cryptocurrencies would not be constitutional.⁸⁰ This suggests that the power to determine what is legal tender is solely reserved as a federal power and not one which states have any constitutional power to decide. Likewise, we might expect that if Bitcoin or anything else became federally accepted legal tender, that states would have no power to prevent this.

What does legal tender status convey? It means that all payments other than United States “coins and currency” can be rejected by the United States as payment for “debts, public charges, taxes, and dues.”⁸¹ Further, in contracts where the method of payment was not specified, and the payer pays in U.S legal tender, the seller cannot compel performance through another method of payment.⁸² Thus, legal tender “confers a right on the payer.”⁸³ It means that the payer has the right to pay in legal tender, unless the contract had otherwise specified. Noting the direction of the logic, payment which the United States accepts (such as accepting a virtual currency for a tax debt) does not necessarily therefore become legal tender. A U.S taxpayer may be permitted to pay a delinquent tax indirectly through forfeiture of their assets, but this does not confer legal tender status onto their assets (therefore making those assets acceptable as settlement for government debts), absent specific permission from the government. This performance is possible because of an exceptional agreement by the parties—they have compromised on an alternative form of payment that falls outside the statutory legal tender form as well as outside the predetermined contract form. Because this form of payment (asset forfeiture of equal or greater value) is not granted legal tender status, the government retains the right to reject payment that is attempted in that form and demand payment through legal tender only. But then, what if the government were to accept another form of payment as acceptable for tax payment? Would that decree, precluding the government’s ability to reject payment of that form, grant the form legal tender status? While 31 U.S.C. § 5103 provides that U.S “coins and currency” are legal tender, it does not preclude other forms of legal tender.

Within the United States, legal tender issues tend to revolve around what

⁸⁰ U.S. CONST. art. I, § 10, cl. 1.

⁸¹ 31 U.S.C. § 5103

⁸² Goldberg, Dror. *Legal Tender*, 6 (Bar-Ilan University, Department of Economics, Ramat-Gan Working Paper, No. 4, 2009) <https://ssrn.com/abstract=1292893>.

⁸³ *Id.* at 4.

the government can issue as money and what the government will accept as payment (such as payment for taxes). Because legal tender status in the United States does not include a requirement for businesses or individuals to accept that currency as payment for private debts or in private transactions, the legal tender status in the United States can be considered a narrow definition. Where foreign currencies are exchanged or traded directly and physically (such in border towns or at airport money-changers), their use tends to mirror a commodity traded in exchange for U.S dollar, regardless of the foreign currency's "legal tender" status in its home country. But legal tender within the United States has evolved over time, from a particularly restrictive system requiring the government to only transact in metal coinage (generally gold coins) to one that allowed for paper currency trading by the government out of necessity (gold coins which were already severely burdensome to trade became impractical in the Civil War economy), and now one that clearly accepts trade by the government in electronic funds.⁸⁴ As the nature of legal tender has changed to keep up with the needs and realities of the government's finances, and the status of legal tender remains largely a function of the government's own decisions regarding its acceptance of forms of payments for debts and settling accounts, cryptocurrencies may be cresting a new horizon in legitimacy.

Several states are considering measures to accept cryptocurrencies as payment for some debts, such as state taxes.⁸⁵ These states are largely considering measures that would involve receiving cryptocurrency payment immediately converted to U.S dollars on receipt, to avoid the volatility issues associated with some cryptocurrency markets and to refrain from managing large cryptocurrency holdings. Instead, this process would be akin to receiving payment through credit cards, whereby the received funds are immediately exchanged for U.S dollars on receipt, generally through a third-party servicer at the spot price, though some claim that transaction fees may be lower with cryptocurrencies. Does accepting cryptocurrencies as payment to states bolster

⁸⁴ For a look at the evolving nature of legal tender within the United States and the various historical forces that affected changes in the acceptable forms of U.S. legal tender, see Dam, K. W. *The Legal Tender Cases*. THE SUPREME COURT REVIEW, 1981, 367–412. (1981). doi:10.1086/scr.1981.3109549. In that discussion, the legal tender cases are *Hepburn v. Griswold*, 75 U.S. 603, 8 Wall. 603, 19 L. Ed. 513, 1868 U.S. L.E.X.I.S. 1136 (1870). (holding that the United States can coin money, but not that it could deal in paper money), *Knox v. Lee*, 79 U.S. 457, 12 Wall. 457, 20 L. Ed. 287, 1870 U.S. L.E.X.I.S. 1220 (1871). (holding that the United States could make paper money legal tender for use to pay a government debt), and *Juilliard v. Greenman*, 110 U.S. 421, 4 S. Ct. 122, 28 L. Ed. 204 (1884). (upholding using government paper "greenbacks" for payment, and articulating a much more expansive view of the government's latitude in making legal tender decisions, concluding that legal tender was "a political question, to be determined by Congress when the question of exigency arises").

⁸⁵ See discussion *infra* Section IV.A.1.

claims of legal tender status within the United States?

During the economic woes (and monetary restraints) of the Civil War, Justice Salmon Chase, who in a previous role as Treasury Secretary had strongly favored a system of national banks replacing the then more prolific state banks was able to rule in favor of a law that effectively taxed state currencies out of existence.⁸⁶ However, even before this sharp demise, state bank notes were “unsatisfactory” as currency and often traded below face value with regular fraud such that the *Veazie* court described the state bank note system as “issued by numerous independent corporations variously organized under [s]tate legislation, of various degrees of credit, and very unequal resources, administered often with great, and not unfrequently, with little skill, prudence, and integrity.”⁸⁷ While payments to the federal government were made in U.S coin or currency (and prior to the Civil War era monetary issues that lead to the “legal tender cases,” generally gold coins) the U.S Supreme Court in *Juilliard v. Greenman* held that the decision of what constituted legal tender was largely a political question, and that Congress could determine the methods of legal tender in any way that was not prohibited.⁸⁸ Considering the evolution of digital payments to be a preferred payment method, even for payment of government debts (and keeping in mind the quite reasonable argument that the Framers did not even intend issuances of paper money to be constitutional), the question remains open regarding whether other forms of performance can become so normalized as to become legal tender, or if the government must expressly adopt a virtual currency as legal tender for it to become acceptable as performance for government debts (absent exceptional situations).⁸⁹

Then one might ask, if the legal tender is a political question that may possibly be answered by the realities of normalized economic use, when (if ever) would a payment form become legal tender through normalization? We can understand the legal tender debate as concerning strictly what the U.S government is required to accept as payment for government debts. Within this strict construction of the question, there can be an even more strict answer: Only

⁸⁶ *Veazie Bank v. Fenno*, 75 U.S. 533, 8 Wall. 533, 19 L. Ed. 482, 19 S. Ct. 482 (1869) (holding that a federal tax of 10 percent levied on new state bank notes was not a direct tax, not subject to apportionment for constitutionality, and was constitutional).

⁸⁷ *Id.*

⁸⁸ *Juilliard*, 110 U.S. 421.

⁸⁹ *See* Dam, 382-390 (1981) for discussion regarding the evolution of the legal understanding of constitutionally acceptable deviations from the Framers’ likely intent that paper currency could not be constitutionally issued by the federal government and the way in which the unprecedented monetary situation of the Civil War lead development of a new currency regime under the Necessary and Proper clause.

that money which fits under the criteria listed in 31 U.S.C. § 5103 is statutorily defined as legal tender, and all other money is suspect as legal tender: The government retains the authority to reject payment other than in “United States coins and currency.”⁹⁰ But 31 U.S.C. § 5103 does not provide that all other forms of payment are not legal tender. It only lists U.S coins and currency as one form of legal tender, and defines foreign gold or silver as not being legal tender. This leaves substantial room for interpretation regarding whether other specific forms of money are or are not legal tender.

One reason why this question may, for the time being, elude answer, is that the question is largely theoretical where United States coins and currency are considered valuable and worthwhile forms of exchange in the financial marketplace. As long as this is the case, even if a person intends to pay a government debt in some other form, converting the payment into U.S coin or currency will be a simple matter, and one which will be unlikely to lead to a challenge as to whether the payment has properly been made.⁹¹ Because currently, many vendors are willing to provide exchange between a variety of payment forms and U.S coins and currency, there is no shortage of go-betweens for this transaction, and transaction costs remain minimal. But this assumption may not hold forever. The necessity of considering the question (in light of a failure of these transaction costs to remain low) is highlighted by the U.S government’s concern regarding the growth of non-bank payment systems (referred to as the “third tier” by Cheng and Terregrossa) farther away from the Federal Reserve’s locus of control as well as customer reliance on stablecoins and non-bank payment systems expecting an equivalent to a cash account with similar risk protection as potential dangers to the U.S dollar market.^{92,93} In a scenario where the value of U.S government coins and currency have declined as a payment method, and users prefer to pay their U.S government debts in other forms, but vendors are unwilling to effect a conversion to U.S government coins and currency without charging high transaction fees, it may be that

⁹⁰ 31 U.S.C. § 5103.

⁹¹ This assumption that there is ready exchange between U.S dollars and other forms of payments may, ironically, be used to detract from the use of Bitcoin itself as money. A study of El Salvador’s Bitcoin adoption and the actual uses by people and businesses in the area reported that the firms that use Bitcoin as a payment system are “mostly very large firms” and “71% of sales are converted into dollars and then withdrawn as cash”. Others might respond that this 71% value is remarkably low compared to transactions in other payment forms. Alvarez, F. E., Argente, D., & Van Patten, D. *Are Cryptocurrencies Currencies? Bitcoin as Legal Tender in El Salvador*. NATIONAL BUREAU OF ECONOMIC RESEARCH, (No. w29968), 25 (2022).

⁹² Cheng, J., & Terregrossa, J. *A Lawyer’s Perspective on US Payment System Evolution and Money in the Digital Age*. FEDS NOTES FORTHCOMING. (2021).

⁹³ PRESIDENT’S WORKING GROUP ON FINANCIAL MARKETS, ET AL., REPORT ON STABLECOINS, 2 (Nov. 2021) https://home.treasury.gov/system/files/136/StableCoinReport_Nov1_508.pdf,

challenges between U.S government debt holders and the U.S government over method of payment become more common. In that scenario, challenges to U.S government obligation to accept certain forms of payment may be more prevalent and U.S government debt holders may be more reticent to take on the costs of exchange. Regarding the specific topic of this paper, a U.S government debt holder who attempted to pay in Bitcoin and was unwilling to undertake exchange costs on their own, would further be challenging the U.S government's ability to maintain monetary sovereignty. Because, in the face of the declining value of its own coin and currency as an exchange instrument, the U.S government would have an interest in retaining the right to reject another currency as payment for debts, the likelihood that this payment would be rejected is strong. Considering this counterfactual, however, one ought to note that this likely occurs in a dynamic global market for payment systems. If the scenario is one where Bitcoin has become a premier payment method and U.S coins and currency have become decidedly less so, then we would also expect that payment servicers would be willing to service Bitcoin payments to the U.S government, thus providing a ready solution. Where we would expect to see more litigation of this matter would be where transaction costs are high and each party has a strong interest in maintaining payment in their preferred method, but also where both parties are somewhat evenly matched in terms of their leverage to force the other party to the settlement.

One reason why legal debates around cryptocurrencies can be so important is precisely because of the ways in which cryptocurrencies can be a potential threat to countries' currency policies as well as to traditional financial institutions such as banks.⁹⁴ For regulators with a history of working with these organizations to create the rules that facilitate their industry, the disruptive nature of cryptocurrency can be a barrier to effective regulatory oversight. With regards to their status as currency competitors, cryptocurrency use and adoption may be detrimental to governmental interests, and some regulators may see obstructing cryptocurrency adoption as a major goal of government policy.⁹⁵ While the U.S. Constitution places the exclusive power to issue currency in the hands of the federal government, the Stamp Payments Act of 1862 (restricting private currency issuance) was enacted at a time when private currencies were particularly poised to be in competition with federal currency, which was being melted by individuals when the price of metal rose above the nominal value of the coins.⁹⁶ This discussion is beside the point, however, as a currency need

⁹⁴ Ishikawa, M. *Designing Virtual Currency Regulation in Japan: Lessons from the Mt Gox Case*. JOURNAL OF FINANCIAL REGULATION, 3(1), 125-131, 126. (2017).

⁹⁵ Chodorow, A. *Bitcoin and the Definition of Foreign Currency*. FLA. TAX REV., 19, at 365. (2016).

⁹⁶ U.S. CONST. art. I, § 10, cl. 1. See Tu, K. V. & Meredith, M. W., *supra* note 22, at 316-319, for

not be accepted for payment for all debts or the sole form of money for it to be legal tender.

1. Can States Adopt Cryptocurrencies as Legal Tender?

Article I of the U.S. Constitution says states shall not “coin Money [or] emit Bills of Credit.”⁹⁷ Justice Story proclaimed that the law “does not prohibit private persons, or private partnerships, or private corporations...from issuing bills of credit.”⁹⁸ While states are prohibited from issuing their own currencies, that does not prevent them from accepting alternative forms of payment. The Colorado governor announced the state’s intention to accept cryptocurrency for state taxes, using an intermediary to accept payment which would be transferred in U.S dollars to the state revenue agency.⁹⁹ This is a far cry from acceptance as “legal tender” in a state. For the state to grant a cryptocurrency legal tender status, would require that all state payments in that state be payable in that cryptocurrency. This could be expected to similarly grant that option as payment for judgements from that state’s courts. The Colorado system of accepting a cryptocurrency as a payment method through an intermediary for immediate exchange into a U.S dollar amount provides the advantages of being simple to implement and reducing the risks of holding cryptocurrencies as assets for the state. From a legal standpoint, the use of an intermediary makes it difficult to argue that any significant policy change has occurred. Likewise, a state’s decision to accept a cryptocurrency in this same fashion for other state payments (through an intermediary, at a vender-determined spot price) would likely also provide little change in a legal sense. The current acceptance by state tax authorities of cash equivalent forms such as debit card payments or wire transfers does not make those forms of payment “legal tender.” Put more succinctly, the acceptance of any of these forms does not require the state to accept payment in these forms. Its acceptance is of the state’s own prerogative. In this sense, we may describe the Colorado decision as an administrative decision—a choice to facilitate one method of payment from tax debtors. The El Salvador legislation is unique in that it sets a legislative requirement for Bitcoin to be accepted for all payments (both public and private).

With regard to judgements in foreign currency, the home currency rule

further discussion regarding the Stamp Payments Act and its historical context.

⁹⁷ U.S. CONST. art. I, § 10, cl. 1.

⁹⁸ *Briscoe v. Bank of Kentucky*, 36 U.S. 257, 11 Peters 257, 9 L. Ed. 709, 7 S. Ct. 1149 (1837) (Story, J., dissenting).

⁹⁹ Rooney, K, Smith, J., & Geeter, D. *Colorado Gov. Jared Polis on Plans to Accept Crypto Tax Payments: CNBC Crypto World*. CNBC CRYPTO WORLD. (2022, February 15). <https://www.cnn.com/video/2022/02/15/colorado-gov-jared-polis-wants-to-make-the-state-a-leader-in-crypto-acceptance.html>

generally required that judgements be rendered in the currency of the jurisdiction that rendered the judgement.¹⁰⁰ Several states have explicitly rejected this rule by providing for awards to be allowed, or required in foreign currency, particularly as settlement for contracts originally stipulating payment in foreign currency.¹⁰¹ This push towards judgements in foreign currencies is, in part, a response to fluctuation in foreign currency markets wherein a decision to require payment in U.S. dollar may cause a significant difference in the judgement amount. Further, the choice of an exchange rate, if the option to pay in U.S. dollar remains, is equally important in situations of exchange rate fluctuation. Further, from the standard of commercial practice, contracts requiring payment in a particular currency are a means of anticipating the risks of breach by parties to the contract, and upholding the contracts as written is a core principle of contracts in American jurisprudence.^{102, 103} When a party would prefer to pay a private debt in a form other than that delineated, repayment in the currency of that jurisdiction may be allowable. With regards to cryptocurrencies, where exchange rates are similarly, if not more, volatile, this consideration appears all the more central. The Restatement (Third) of Foreign Relations states that U.S. courts “are not precluded from giving judgment in the currency in which the obligation is denominated or the loss was incurred,” interpreting the Coinage Act (and its legislative history) to not prohibit these judgements.¹⁰⁴ Similarly, we may expect that this logic guides contracts for payment in cryptocurrency. Ultimately, where payment in a method other than written is provided for, the considerations will largely rely upon the particular exchange rate to use and the time at which that exchange rate is set. If these considerations remain the only considerations in most situations, then for all intents and purposes the cryptocurrency is being treated as any other currency (the only value consideration is the amount transferred). Inasmuch as certain users may prefer to hold a cryptocurrency over the currency of their jurisdiction, this may not apply, but those situations may be more akin to collectible coins and paper money which is valued primarily for its novelty rather than its function as money.

¹⁰⁰ Brand, R. A. *Restructuring the US Approach to Judgments on Foreign Currency Liabilities: Building on the English Experience*. 11 YALE J. INT'L L. 139. (1985).

¹⁰¹ Beal, C. *Foreign Currency Judgments: A New Option for United States Courts*. 19 U. PA. J. INT'L ECON. L., 101, 102. (1998).

¹⁰² Andrews, N. *Interpretation of Written Contracts*. ARBITRATION AND CONTRACT LAW. Springer, Cham. 229-248 (2016).

¹⁰³ Horwitz, M. J. *The Historical Foundations of Modern Contract Law*. HARVARD LAW REVIEW, 917-956. (1974).

¹⁰⁴ Restatement (Third) of Foreign Relations § 823(1), reporters' note 1 (1987).

B. Specific Performance in Cryptocurrency and Money Value Risk

Economically, a series of risks are present in contracts with regards to changes in the value of money over time. With regards to the usefulness of money received at different times, the time value of money and general accounting procedures for discounting money which has been delayed in payment provide courts with a series of tools for estimating payment value. With regards to changes to the value of money itself, such as due to significant changes in monetary risk (generally occurring during times of extreme fiscal crises in conjunction with monetary crises, such as during the breakout of a war, and even more acutely in events such as the U.S Civil War, where the government's future ability to pay its debts or manage its currency may be in doubt) can make differences between value and price unconscionable.¹⁰⁵ Where issues arise from changes in relative value of currency, jurisdictional changes can also come to the forefront. Further, because legal jurisdictions often coincide with monetary regimes (in governments which maintain monetary sovereignty), there is an incentive for jurisdictions to craft interpretations which favor performance in their own currency because doing so may preserve their own businesses from needing to make costly conversions from a devalued currency to a foreign one, to meet their obligations. In the globalized financial system, however this incentive is controlled in part by the possibility for the creditor to seek damages in their home jurisdiction.¹⁰⁶ With regards to Bitcoin obligations, this may lead jurisdictions to favor performance in their own currency, particularly because, during times of sharp inflationary pressures on their currency, it may allow debtors to escape obligations to transfer the jurisdiction's currency for exchange at unfavorable rates. If Bitcoin remains a currency without a "home" jurisdiction, this legal skew towards jurisdictional currencies (if such a skew exists) in judgements will likely remain.

Contract terms as well as the reasonable expectations of the parties with regards to risk allocation may be relevant to determinations as to the method of payment. Generally, with regards to obligations specifically denominated in foreign currency, Justice Holmes wrote "An obligation in terms of the currency of a country takes the risk of currency fluctuations and whether creditor or debtor profits by the change of law takes no account of it"¹⁰⁷ This currency philosophy follows the general understanding of contracts that the terms should

¹⁰⁵ Baumann, H. T. *Equity: Specific Performance: Decrease in Money Value Subsequent to the Inception of an Option Contract Is Not Hardship*. MICHIGAN LAW REVIEW, 51(1), 110–113. (1952). <https://doi.org/10.2307/1285660>

¹⁰⁶ Mann, F. A. *Specific Performance of Foreign Money Obligations?* THE MODERN LAW REVIEW, 31(3), 342–345. (1968). <http://www.jstor.org/stable/1092512>

¹⁰⁷ *Deutsche Bank Filiale Numberg v. Humphrey*, 272 U.S. 517, 519. 47 S.Ct. 166 (1926).

guide interpretation: Where a clause specifies the currency form, then payment ought to be made in that form, barring special circumstances. Then, for the purposes of our analysis, might contracts for Bitcoin be considered a currency with regards to the rule above? If so, then applying this judgement day rate will mean that the value of an obligation to pay in a specified amount of Bitcoin may leave significant currency risk to the obligor. If not, then this risk may transfer to the other party, but Justice Holmes's thinking suggests that the guiding philosophy should be that clauses stating performance in specified amounts of a currency, have clearly allocated certain risks, and that risk allocation should be shown deference.

Is it significant that Bitcoin has not generally been considered a “currency of a country”?¹⁰⁸ In the dissenting opinion in that case, Justice McReynolds argued that the majority's reasoning for distinguishing the case from an earlier case, *Hicks v. Guinness*, because the case at issue dealt with a debt which was payable in Germany and only enforcement was sought in the U.S. court, whereas in *Hicks*, the obligation was payable in the U.S and governed by U.S laws, was erroneous.¹⁰⁹ In his *Deutsche Bank* dissent, Justice McReynolds argued instead for setting the exchange rate at the date of breach, which he argued would be in keeping with treating the obligation denominated in German Marks (devalued significantly by the time of judgement) as an obligation which had already been translated to money (Marks), as opposed to a obligation denominated in a commodity (wheat) which by necessity must be transformed into a money debt at judgement, unless specific performance is required.

Justice McReynold's dissent helps elucidate the importance of the country's currency issue. Imagining an equivalent case to *Deutsche Bank* wherein the obligation was instead a deposit into a bank where the currency of the jurisdiction was Bitcoin, and the payment was retrievable at any time in Bitcoin, would be difficult to imagine—though the El Salvador regulation brings us quite close. Where private debts are payable in Bitcoin, might an El Salvador-based banking institution denominate its bank deposits in Bitcoin and payable in that denomination to its account holders? If it did so, it would appear that the El Salvador regulation on its face allows such a policy. Even if the entity was simply a Bitcoin wallet service, rather than a traditional bank, the expectation should remain the same, setting aside any additional issues arising from bank regulation. If a deposit holder sought enforcement in a U.S. court for that debt, would the court apply the exchange rate at judgement or at breach? Would it matter if the court determined that the deposit denominated in Bitcoin (and hypothetically available for redemption in Bitcoin in El Salvador at any

¹⁰⁸ *Id.* at 519.

¹⁰⁹ *Hicks v. Guinness*, 269 U.S. 71, 46 S. Ct. 46, 70 L. Ed. 168 (1925)

time) was only a set amount of a commodity, rather than an obligation due in money?¹¹⁰ SEC v. Shavers determined that for the purposes of the *Howey* test regarding investments of money, Bitcoin was money in that case, because it can “be exchanged for conventional currencies,” but while quite liberal criteria may allow for it to be money with regards to securities law (wherein commodities are regularly denominated as money forms), within the *Deutsche Bank* “currency of a country” regime it may not be so convenient to fit a Bitcoin-shaped bank deposit into a money-shaped hole.¹¹¹

Within this imagined Bitcoin suit would the deposit in Bitcoin be treated by the court as the “currency of a country”? Within the reasoning of the *Deutsche Bank* majority, the need to differentiate from the decision in *Hicks* to use the date of breach for the exchange rate was that in *Hicks*, “the parties did not make their contract with a view to treating the currency dealt with in the contract as a commodity. The parties intended the foreign currency to be treated as money.”¹¹² Thus, because the “firm had a claim here [United States], not for the debt, but, at its option, for damages in dollars” the Court applied tort liability for failure to deliver on the debt.¹¹³ In our hypothetical Bitcoin suit, by suing for enforcement of the contract in a U.S. court, does the failure to deliver on the debt render the bank liable to pay in U.S dollars, denominated at time of breach?

While the majority in *Deutsche Bank* used the term “currency of a country” to define the deposit in that case, one might note that *Hicks* concerned a debt obligation of a German company to an American company, one denominated in a number of German Marks to be paid, but which did not (as we would expect with contracts for commodities) specify a contract price of the marks to be delivered, and thus the Court in *Hicks* decided that the general rule of damages should not be used. Thus, dissenting Justice McReynolds found the majority’s distinction between *Deutsche Bank* from *Hicks* to be erroneous, reasoning that the obligation ought to be the same whether the suit originated in Germany or the U.S., while the majority focused instead on ensuring that the German debtor sued in a U.S. court for a debt obligated in German currency ought to be no worse off than for a debt owed in the U.S denominated in U.S currency (regardless of fluctuations in currency values, as commodities). In our hypothetical Bitcoin suit, would the place the debt was owed be of importance? The majority opinion in *Deutsche Bank* appears to suggest that it would. But would it matter that the court could not enforce payment in Bitcoin (rather than

¹¹⁰ *Shavers*, No. 4: 13-CV-416 (E.D. Tex. Aug. 6, 2013).

¹¹¹ Chodorow, *supra* note 95.

¹¹² *Hicks*, 269 U.S. 71.

¹¹³ *Preston v. Prather*, 137 U.S. 604, 11 S. Ct. 162, 34 L. Ed. 788 (1891), *cited with approval* in *Hicks*.

in U.S dollars)? While Justice McReynolds's dissent indicates a preference for ensuring that suit in either jurisdiction would enforce a similar claim, the majority's opinion instead leads one to believe that the operative issue is not where contract is enforced, or even the form of the money denomination involved, so much as that judgement day exchange rates should be used when the money value is clearly set in the debt obligation (i.e. 5 dollars, Marks, or Bitcoin), indicating that the number of that denomination is the thing to be recovered, and exchange rate risk is not something that should be considered, regardless of which way it moves.

The El Salvador regulation specifically details that the exchange rate for Bitcoin to U.S dollars (the U.S dollar is the official currency of El Salvador) is to be determined by market forces instead of setting a specific index or method for determining exchange rates.¹¹⁴ Would this explicit reference to a free-floating exchange rate push courts in the direction of rejecting Bitcoin as "money" (within the rationale of Justice McReynolds's *Deutsche Bank* dissent)? Because most state currencies are currently free-floating exchange rates, this is not likely to have any major effect on a court's decision regarding whether to treat Bitcoin as a commodity rather than as a form of money.¹¹⁵ The operative issue may rather be the intention of the parties as evidenced in their original agreement. If the parties agreed for a set number of Bitcoin, then it is clear that they are treating Bitcoin itself as a form of measurement and it is being used in the transaction most similarly to money. If the parties have instead agreed to a dollar value to be paid in Bitcoin, then the court could be expected to consider the Bitcoin a commodity being exchanged, but not one being used to measure the value of the exchange. Thus, in general we might expect that non-jurisdictional currencies would find themselves in between the *Hicks* and *Deutsche Bank* reasonings as these are not the currency of a country, tipping the scale towards applying the dollar value (or another state-backed currency) of the non-jurisdictional currency at time of breach as evidenced by the terms of the agreement.

C. Currency Risk

A substantial economic difference between Bitcoin and government currencies is that Bitcoin is, by design, a deflationary instrument. Over time, the rarity of individual units of Bitcoin increases because the protocol increases the difficulty of mining new Bitcoin, and because over time the Bitcoin will

¹¹⁴ Legislative Assembly of El Salvador, *supra* note 1.

¹¹⁵ Levy-Yeyati, E., & Sturzenegger, F. *Classifying Exchange Rate Regimes: Deeds vs. Words*. EUROPEAN ECONOMIC REVIEW, 49(6), 1603, 1619-1620. (2005).

tend to fall out of circulation as users lose access to private keys (for example, due to a hard-drive failure, losing access to paper notes, or neglecting to provide access to heirs upon death) and the associated Bitcoins with very little chance of recovery. This is in contrast with many state currencies. Because paper currencies and coin are physical, they are not as easily divisible as electronic money, but also because countries may tend to pursue inflationary policies over time, such as the United States does. Thus, it may be expected that (if speculative price movements could be removed) the value of Bitcoin in comparison to other state currencies would rise over time, particularly over lengthy time scales. Thus, there may be policy reasons for tending to favor payments using an earlier exchange rate (date of breach), as well as for treating deposits denominated in Bitcoin as really denominated in their U.S dollar value equivalent (or already converted to money, using Justice McReynolds's language in *Deutsche Bank*). Using the earlier exchange rate and the assumption that the value is denominated in a U.S dollar value equivalent (removing any considerations of whether the court needs to consider specific performance in other than U.S dollars) may be expected to generally skew in favor of treatment of the U.S dollar as a currency.

This would tend to favor parties who hold debts in Bitcoin or other deflationary non-jurisdictional currencies and may incentivize a party with a legal liability in Bitcoin to stretch out any legal proceedings to gain from the currency fluctuations in its favor throughout that time, thus reducing its dollar-value payment. Particularly for parties with large portions of their debts held in non-jurisdictional deflationary currencies, the incentive for legal delay may be large. The expected erosion of the non-jurisdictional debt, and their own ability to pay the debt out of their non-jurisdictional currency reserves rather than making a conversion at the spot-price to pay off the debt, can combine to provide salient incentives to waiting out the legal process. This may also discourage early settlement and skew the bargaining power in favor of non-jurisdictional currency liability defendants. Further, because of the tendency for legally risky markets to devalue securities exchanges in those jurisdictions, this tendency may have an effect on cryptocurrency-related payments and business development in the United States.¹¹⁶ This may provide an area for future legal or legislative development on policy or equity grounds.

D. Cryptocurrencies as Foreign Currency

Foreign currencies receive certain favorable treatments under U.S tax law, such as a modest personal use exemption granted to allow U.S tourists abroad

¹¹⁶ Modigliani, F., & Perotti, E. *Security Markets Versus Bank Finance: Legal Enforcement and Investors' Protection*. INTERNATIONAL REVIEW OF FINANCE, 1(2), 81, 86. (2000).

the ability to transact in local currency without having to pay taxes on gains or losses attributable to exchange rate fluctuations during their travels. But tourists in these locations often do not have the option to transact in a currency other than the local currency, and there is currently no jurisdiction where a cryptocurrency is the only accepted payment. Further, when foreign exchange is used by a U.S. taxpayer to transact business or hold funds in an account with multiple currencies, the functional currencies in these transactions are generally required to be accounted for in terms of U.S. dollar exchange rates at the time of transaction. As such, a person can experience a tax gain or loss due to fluctuations in currency and must use a reliable and consistent means of accounting for mixed currency accounts. Where users are primarily conducting their business in government-backed currencies, the IRS determination that cryptocurrencies are not foreign currencies, but rather property, appears appropriate.

The fundamental difference, with respect to responsibility for price stability, between cryptocurrencies without government backing and cryptocurrencies with free-floating exchange rates are that there is no guarantor of the price of free-floating cryptocurrencies. A financial analysis of the cryptocurrency market assessed that cryptocurrency as an asset class was more similar to stock investment than to investment in foreign currencies, largely due to price volatility, changes in ownership (users switching between cryptocurrencies), and financial risk.¹¹⁷ In fact, it appears that where governments are more oppositional in their treatment of cryptocurrencies, users pay higher rates for cryptocurrencies in exchange for government-backed currency.¹¹⁸

V. Stablecoins and State Cryptocurrencies

Stablecoins and state cryptocurrencies provide areas for discussion within a niche of the cryptocurrency space. For the purposes of this discussion, “stablecoins” are cryptocurrencies primarily pegged in value to a state-backed currency. For example, U.S. Dollar Tether is cryptocurrency which is meant to allow a person to exchange one Tether for one U.S. dollar. The purpose of this arrangement is to ease transactions between the underlying state backed

¹¹⁷ Liang, J., Li, L., Chen, W., & Zeng, D. *Towards an understanding of cryptocurrency: a comparative analysis of cryptocurrency, foreign exchange, and stock*. 2019 IEEE INTERNATIONAL CONFERENCE ON INTELLIGENCE AND SECURITY INFORMATICS (ISI). IEEE, 137. (2019, July).

¹¹⁸ Oh, Jeong. Hun. *The Foreign Exchange Market with the Cryptocurrency and" Kimchi Premium*. 22D BIENNIEL CONFERENCE OF THE INTERNATIONAL TELECOMMUNICATIONS SOCIETY (ITS). (24-27 June, 2018). https://www.econstor.eu/bitstream/10419/190386/1/E1_1_Oh.pdf.

currency (U.S dollar in this case) and cryptocurrencies on exchanges or between persons that accept the stablecoin. Thus, while a person may not be able to directly deposit and trade their U.S dollars on a cryptocurrency exchange, by exchanging their dollars for a stablecoin currency, they can achieve the functional equivalent (assuming the stablecoins actually remains stable). Governments have concerned themselves with whether or not stablecoins are adequately capitalized and protected against large selloffs (“bank runs”) or fluctuations in the value of the state-backed currency (runaway inflation, devaluation, or relative increase in value), and stablecoins do present a potential risk for the valuation of the entire cryptocurrency industry as they remain integral to on-exchange trading. For exchange users not utilizing stablecoins, cryptocurrency purchases and sales (for state-backed currency) would need to coincide with deposits and withdrawals.

In the United States, the President’s Working Group on Financial Markets recommended that Congress “act promptly to enact legislation to ensure that payment stablecoins and payment stablecoin arrangements are subject to a federal prudential framework on a consistent and comprehensive basis.”¹¹⁹ The primary legislative interest in stablecoins is regarding creating a stable financial system. With the goal that a stablecoin be, at the very least, stable, the legislative interest has been in maintaining that quality through standards for stablecoin issuers, and in the financial arrangements that underpin their value. Stablecoins by their nature must be in some way tied to the currency for which they trade (the financial arrangements that allow for a U.S dollar stablecoin to ensure access to U.S dollars necessary to protect against a “bank-run” will require the stablecoin issuer to protect themselves from fluctuations in the underlying U.S dollar value). Additionally, because the issuer itself must maintain some level of capitalization to maintain these arrangements, it is not surprising that stablecoins have not emerged utilizing distributed, public ledger, permission-less blockchains. In searching for an analogue for the El Salvador Bitcoin legislation, using existing treatment of stablecoins as a basis is unlikely to be fruitful because of these differences. Similar drawbacks exist within the realm of CBDCs, which represent a form of permissioned “private blockchain” cryptocurrency more closely tied to state currency control.

State cryptocurrencies are varied in their intent and their structure. Here, state currencies will mean any cryptocurrency wherein the software protocol is controlled by a state entity. This is a subset of the “private blockchains” described above wherein the private consortium is wholly a government entity. One version of a state cryptocurrency is a central bank digital currency (CBDC). CBDCs have been explored in the U.S extensively by the Federal Reserve,

¹¹⁹ PRESIDENT’S WORKING GROUP ON FINANCIAL MARKETS ET AL., *supra* note 93, at 2.

including through the Project Hamilton, a research initiative through the Federal Reserve Bank of Boston with MIT’s Digital Currency Initiative.^{120,121} In 2021, a Senate subcommittee hearing explored the use of CBDCs in the U.S.¹²² The Digital Currency Initiative Director, in that subcommittee hearing, described “retail CBDC” as digital bank deposits available for the general public, in contrast to “wholesale CBDC” as digital bank deposits for transactions between banking institutions and the central bank.¹²³ Dr. Nerula’s testimony appeared to describe CBDC’s as within the domain of private blockchains, as defined here, and dismissed calls for distributed ledger technologies within CBDC.¹²⁴ At the same hearing, a former CFTC Chairman supported the use of “Digital Dollars” which, while described as “informed” by distributed ledger technology, runs on a permissioned system and is only meant as an implementation of the current “two-tier” model of providing central bank deposit accounts to financial institutions, which in turn lend regular U.S dollars to retail users.¹²⁵

The Federal Reserve’s research notes that CBDCs could provide benefits such as reducing banking costs for consumers, protecting against bank runs, or giving the central bank more direct control over monetary policy.¹²⁶ Cheng and Torregrossa expand the “two-tier” banking model described above to a “three-tier” model represented by the Federal Reserve, commercial banks, and non-bank payment services, respectively.¹²⁷ In this framework, cryptocurrencies are simply another “non-bank payment” entity which allows people to transact in dollars, without a direct connection to the Federal Reserve or to commercial

¹²⁰ BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM. CENTRAL BANK DIGITAL CURRENCY (CBDC) RESEARCH & PUBLICATIONS. (2022, April 15).

¹²¹ BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM. CENTRAL BANK DIGITAL CURRENCY (CBDC) FREQUENTLY ASKED QUESTIONS. (2022, April 15). <https://www.federalreserve.gov/cbdc-faqs.htm>.

¹²² Building A Stronger Financial System: Opportunities of a Central Bank Digital Currency: Hearing before the Subcomm. on Economic Policy of the Senate Committee on Banking, Housing and Urban Affairs, 117th Cong. (2021). <https://www.banking.senate.gov/hearings/building-a-stronger-financial-system-opportunities-of-a-central-bank-digital-currency>

¹²³ Building A Stronger Financial System: Opportunities of a Central Bank Digital Currency: Hearing before the Subcomm. on Economic Policy of the Senate Committee on Banking, Housing and Urban Affairs, 117th Cong. (2021) (testimony of Neha Narula).

¹²⁴ *Id.*

¹²⁵ Building A Stronger Financial System: Opportunities of a Central Bank Digital Currency: Hearing before the Subcomm. on Economic Policy of the Senate Committee on Banking, Housing and Urban Affairs, 117th Cong. (2021) (testimony of Christopher Giancarlo).

¹²⁶ Carapella, F., & Flemming, J. *Central Bank Digital Currency: A Literature Review*. FEDS NOTES. (2020).

¹²⁷ Cheng, J., & Torregrossa, J., *supra* note 92.

banking institutions. The three-tier system allows us to view cryptocurrency payments as possibly less disruptive from a legal standpoint as they represent something quite similar to money market mutual funds or non-bank payment platforms (such as the services of Venmo, CashApp, and Paypal). CBDCs may then be something even less transformative, in terms of their legal ramifications, than existing cryptocurrencies. While Cheng and Torregrossa discuss the possibility of cryptocurrency companies taking measures to provide interoperability between the three-tiers they describe by integrating themselves with the existing commercial banks, a more relevant question to our discussion exists: If the Federal Reserve uses a CBDC to achieve interoperability between non-bank entities and the Federal Reserve (presumably while using the CBDC's software itself or regulations on its use to enforce certain norms onto its users), would that CBDC necessarily be legal tender for U.S. debt? Would a person holding no commercial bank account and no U.S. dollars be able to pay taxes directly through this CBDC? More importantly, would an end user holding that CBDC then have a direct claim to the equivalent amount of money from the Federal Reserve Bank (an equivalent claim to what commercial banks now have with the tiered system)? Likely, if such a claim exists, the government would feel pressure to set a limit on the protection offered by such a claim (similar to the limits on Federal Deposit Insurance Corporation protection for deposits with commercial banks). Likely, any administrative burdens due to user pseudonymity would be solved at the place of redemption, as a claimant would presumably reveal their identity by submitting their claim. In a released paper on the potential for U.S. CBDC, the Federal Reserve notes that "a CBDC would be a liability of the Federal Reserve, not of a commercial bank."¹²⁸ It is notable that the same paper proposes that a CBDC ought to be intermediated (with banks or commercial payment platforms performing anti-money laundering validation and interacting with retail customers) and that the Federal Reserve plans to debut a FedNow Service in 2023 aimed at bringing some of the advantages of cryptocurrency use to commercial bank deposits ("around the clock, every day of the year, with recipients gaining immediate access to transferred funds").¹²⁹ Within this proposed model, a U.S. CBDC, in combination with FedNow Service of commercial bank deposits, would likely yield a payment system in which U.S. dollar transactions (the depth of the U.S. dollar market) and CBDC-intermediated cryptocurrency transactions converge into similar terrain. For users of this type of U.S. CBDC, the CBDC may present a benefit over commercial bank deposits in some instances in that they represent a direct claim for redemption by the Federal Reserve, as opposed to being

¹²⁸ FEDERAL RESERVE. MONEY AND PAYMENTS: THE US DOLLAR IN THE AGE OF DIGITAL TRANSFORMATION, 3. (Jan. 2022), <https://www.federalreserve.gov/publications/moneyand-payments-discussion-paper.html>.

¹²⁹ *Id.* at 7, 13-14.

governed by their ability to recover funds from their commercial bank.

The discussion of U.S. CBDCs by the U.S. government tends to concern itself with issues of economic stability, maintaining primacy of the U.S. dollar in global transactions, and providing access to the financial system to those who are currently outside of it. The Federal Reserve's research does delve into the question of CBDCs as a means of ensuring depth in the network of U.S. dollars by allowing people to transact in U.S. dollars through many different means, and theorizes a U.S. CBDC as a means of simply connecting more end-users with U.S. dollars. But when we consider this discussion in light of the El Salvador Bitcoin regulation, there appear to be quite a few parallels, even within the context of El Salvador's economic position relative to the U.S. El Salvador, by providing legal heft behind the legal tender determination (acceptance of Bitcoin as payment for "all debts"), is increasing the depth of the network of trade in the Bitcoin market by opening all the transactions within that jurisdiction to the cryptocurrency. But adoption by a foreign country is necessarily different from the legal ramifications of the U.S. taking a similar stance in that it need not imply the same obligations on the part of the U.S. government or for U.S. transactions.

The primary purposes of CBDCs are as a means of maintaining connection to Central Banks to facilitate use of the connected state currency.¹³⁰ Thus, they necessarily maintain connections to existing currency and banking institutions. A CBDC pilot program in China ("e-CNY") is a digital currency counterpart for that country's state currency.¹³¹ It allows retail users to transact in the state currency during off-market hours and through peer-to-peer exchange instead of being mediated by a commercial bank transfer.¹³² If CBDC implementations tend to follow the e-CNY standard and imitate cash transactions, but in digital format, there is little reason to think that CBDC implementation would have much impact on the legal and regulatory framework. While some of the U.S. Federal Reserve research detailed above on CBDCs has suggested alternative possibilities for digital cash such as using it as an additional tool for monetary policy or as an enforcement or incentive mechanism for various government policies, and CBDCs which take these more novel forms may bring up novel regulatory issues, but pilot programs for retail CBDCs have generally taken

¹³⁰ Ward, O., & Rochemont, S. *Understanding Central Bank Digital Currencies (CBDC)*. INSTITUTE AND FACULTY OF ACTUARIES, 23. (2019).

¹³¹ Allen, F., Gu, X., & Jagtiani, J. *Fintech, Cryptocurrencies, and CBDC: Financial Structural Transformation in China*. JOURNAL OF INTERNATIONAL MONEY AND FINANCE, 124, 102625, at 3. (2022).

¹³² CHEN, Q., DONG, S., & LI, J. *Outlook of Digital Currencies and Future Restrictions on Cryptocurrencies*. 2022 7TH INTERNATIONAL CONFERENCE ON FINANCIAL INNOVATION AND ECONOMIC DEVELOPMENT (ICFIED 2022). Atlantis Press, 806, 808. (2022, March).

forms which are a “digital complement to physical cash, featuring in everyday payment similarly to banknotes and coins.”¹³³

Both stablecoins and state cryptocurrencies, as we have defined them above, are private blockchains. They may employ public ledgers and even pseudonymous transactions and direct (peer-to-peer) exchange, but their primary purpose is to leverage low transaction costs from the encryption technology as a solution to the double-spending problem. Bitcoin and the El Salvador regulation do not deal with stablecoins or cryptocurrencies. Private blockchains present different issues than the Salvadorian Bitcoin regulation. State cryptocurrencies, however, and particularly the varying degrees with which states may supplant their existing paper money currencies with digital cryptocurrencies in the future, present fruitful areas where discussion around the Salvadorian Bitcoin regulation may become relevant in the future. If those states adopt their state cryptocurrency as an equivalent to their paper money, and consider it acceptable legal tender payable for at least state debts, then the parallels become even more central.

VI. Why Does Legal Tender Status Matter?

The ramifications of El Salvador recognizing Bitcoin as legal tender will depend in part on how the United States recognizes the legal tender decisions of other countries. Further, they will depend on how foreign legal tender is treated within the U.S. It is likely that the El Salvador regulation does not mean Bitcoin is recognized as foreign currency under financial law in the United States. Because the FinCEN statute defines currency as money designated as “legal tender and that circulates and is customarily used and accepted as a medium of exchange *in the country of issuance*” (emphasis mine) El Salvador’s lack of control over the Bitcoin protocol, or even its market share of Bitcoin holdings, would likely lead it to fail to meet the status of being considered issued by that country.¹³⁴ The plain meaning of the word issuance seems to indicate that unless a government had at least partial control over a private blockchain, that it would be unlikely for a cryptocurrency to meet this definition. Even if a state were to own a mining operation for cryptocurrency, this would likely remain far from the concept of issuance as it is generally used in reference to a country’s paper money. Because the underlying cryptocurrency software is more in control of the “issuance,” and the state mining operation would only be providing computing capacity for use in that ecosystem, the state’s control over

¹³³ Morales-Resendiz, R, *et al. Implementing a Retail CBDC: Lessons Learned and Key Insights*. LATIN AMERICAN JOURNAL OF CENTRAL BANKING, 2(1), 100022, at 8. (2021).

¹³⁴ 31 C.F.R. § 1010.100(m)(2022).

the currency would likely not reach to levels of control that we would expect with regards to paper currency. Central bank digital currencies and state cryptocurrencies may, however, meet these definitions, and inasmuch as they are low-transaction-cost equivalents of digital state currency counterparts, will likely be treated similarly to that existing currency.

“Country of issuance” implies that the country itself (or the government of that country) is doing the issuance, rather than individual users or miners residing within the country. As El Salvador has not licensed or directed mining operations by private operators on its behalf, it would likely not fall under this definition. The terminology of issuance appears to connote monetary sovereignty on the part of the issuer. Even if a country maintains some mining capacity, without having adequate control over other potential miners on the network, and the ability to maintain integrity over this control, in a way similar to what we expect from countries and their sovereign currencies, the issuance test would likely not be met. This would only be possible on a private blockchain network, where the developers maintain control over currency creation. Thus, Bitcoin’s technology appears to make it unlikely that it will ever meet the 31 C.F.R. § 1010.100(m) definition of currency. Theoretically, if a state entity controlled a large portion of mining capacity, it may be “issuing” the currency itself, but that is currently far from the case for El Salvador.

If the United States were to recognize Bitcoin as a currency of El Salvador, and therefore a foreign currency within the U.S, this would likely change the IRS classification of Bitcoin from property, providing a tax treatment that discourages transactions and encourages long-term investments (such as with other capital assets or property).¹³⁵ Since IRS Notice 2014-21, two hurdles the IRS noted to cryptocurrencies’ treatment as foreign currencies have been cleared by Bitcoin. It is now accepted as a means of exchange in one country, and can be considered as legal tender within that country (though the IRS may still not recognize it as such for tax treatment). Still, despite El Salvador’s policy considerations surrounding monetary sovereignty it retains little actual control over Bitcoin from an economic standpoint.

If the relationship of El Salvador or another country to Bitcoin were to warrant a change in the Treasury Department’s treatment of Bitcoin into that of foreign legal tender, would that have an effect on Bitcoin owners in the U.S? Were Bitcoin to be treated as foreign currency, the safe harbor for personal transactions gains of less than \$200 would provide some relief for people who

¹³⁵ Wiseman, S. A. (2016). *Property or Currency: The Tax Dilemma Behind Bitcoin*. Utah L. Rev., 417, 430-435 (arguing that the IRS classification was incorrect and discourages adoption of Bitcoin as a currency, through its pronouncement).

want to exchange goods and services directly for Bitcoin, but would only apply if they hold their actual account in U.S dollars and exchange it at the point of sale for Bitcoin, which may be an unlikely scenario.¹³⁶ This could, in theory, have some effect in stimulating demand towards Bitcoin transactions.¹³⁷ Likewise, the money transmitter rules apply to transaction of foreign currency, and so exchanges would still be required to comply with anti-money laundering and Bank Secrecy Act requirements.

But even with legal tender status of Bitcoin, the hurdle to treatment as foreign currency appears impossible for Bitcoin to ever scale as a non-private (permissionless) blockchain. Because that inability is necessarily a core component of the Bitcoin software (and that Bitcoin users may already have self-selected as people who prefer that characteristic and would migrate to other services if it were no longer the case), even legal tender status recognized by the U.S would likely have no effect on the tax treatment of Bitcoin as it would not meet the criteria for a foreign currency determination. If any such change were to occur, it would need to arise from congressional desire to reformulate the treatment of currency to one that is agnostic about the question of statehood and state “issuance”. For institutional reasons, even if the political will to accomplish such an effect arose, it is unlikely that Congress would make such a change, at least while the U.S Dollar retains a premier role in the fiat monetary system.

VII. Conclusion

The meaning and value of money are, while quite central to the everyday workings of transactions both mundane and otherwise, nebulous or unimportant as far as the law appears to show. The “legal tender cases” come from a time before digital money existed, and when digital money existed as a counterpart of paper money, there appeared to be little difference in making the leap from a paper money standard to a digital money standard after already having left the domain of “hard” currency in favor of fiat. And yet, the questions posed by cryptocurrencies are far more complex than the simple movement from paper dollars to digital dollars, in part, at least, because of the ways in which cryptocurrency can exist outside of state control.

The essence of the legal tender question concerns control over the currency. Because currencies themselves are used as means of exchange (though they have other uses, as well), the question of control goes to the heart of the issues

¹³⁶ 26 U.S.C. § 988 (e)(2)(b)

¹³⁷ Wiseman, *supra* note 135, at 430-435.

between currencies and non-currency property. The special considerations for currencies deal with the reality that currencies controlled by states can have their price fluctuated by the decisions of these issuing states. Because these currency fluctuations (what some might call manipulation) can be controlled in part by the issuing entity, these special considerations aim to keep these manipulations within established bounds (by containing their spillover effects into the retail economy, as the currencies themselves are generally beyond control by anyone but the issuing/controlling entity). Thus, when dealing with private cryptocurrencies where fluctuation may occur due to changes by the issuer (or the underlying consensus protocol for accepting valid currency), existing common law remedies for fluctuations in contract value (generally defaulting to payment in the jurisdiction's valid currency, at an exchange rate deemed appropriate by the terms of the contract or type of contract) where the terms of the contract do not already provide explicit terms, are consistent with our expectations that cryptocurrencies resemble other currencies. The controlling principle in these situations will likely be the economic reality of the use. If the contracting parties have intended to use cryptocurrency as a currency, then its economic reality matches that of a currency and that would presume treating it as a currency, for the purposes of that contract and its interpretation.

Because the underlying technology of cryptocurrencies allow them to be used in place of other forms of money as a medium of exchange, their transactions are of interest to anti-money laundering statutes, the Bank Secrecy Act, and money transmitter statutes. Because they can be used as the basis for speculative profit, and securities, futures contracts, and derivatives can be based on their fluctuations, they have implications for securities laws. While they are digital, they are not intangible property, as their value is preserved in an exclusive physicality (the knowledge of the private key controls access to the transferrable but not duplicable value of the cryptocurrency controlled by that key), though they are property, having implications for property law, tax law, opening the way for criminal and civil litigation. The private contracts between exchange users and exchanges can lead to private regulation regimes in arbitration courts. Because cryptocurrencies have implications in these diverse areas of law, regulation has focused on fitting existing law to those ways in which cryptocurrencies fall under the purview of these existing statutes and jurisdictions.

While the result of this approach may be a patchwork of regulation that can appear, to the casual viewer, difficult or confusing, this approach resembles the reflection of determining that cryptocurrencies are, by themselves,

property.¹³⁸ From this determination, the uses of cryptocurrencies (as the basis for securities, futures contracts, money transmission, etc.) are a reflection of the cryptocurrencies own ability to hold value and be useful as a means of exchange. Any other property which displayed these same characteristics (being a reliable means of exchange and tending to hold value) can also, within their capacity to meet these characteristics, be the basis for treatment under the same regulations. Thus, all commodities which are the basis of futures contracts are potentially subject to CFTC regulation of those futures contracts, all property which can experience a gain or loss on sale are potentially subject to a tax liability, and so on. What appears as a patchwork of regulation is the consequence of a regime that focuses on how this property is actually used, rather than worrying about passing regulation first without regard to consequences. Taking a conservative approach to new legislation in the relatively new market allows time and space for the market to evolve and for users to work out the purposes of these technologies. This approach necessarily risks the subversion of expectations for users who partake in an unregulated or less-regulated market, but preserves the development of newer expectations amongst those users concerning what is appropriate for that technology such that they can position themselves within the existing regulatory regime to protect themselves from unwanted exposure. In exchange for this risk, this conservative approach allows norms and behaviors to coalesce around incentive structures that work to meet the needs of those users, unhampered by the expectations of regulators. For regulators, shifting the burden of developing these norms onto the industry and market as a whole, reduces the information costs associated with creating a comprehensive policy before the technology's ramifications (and potential uses) become clear.

The FinCEN 2013 guidance used, as part of its determination that cryptocurrency exchanges fall under money transmitter rules and are not considered foreign currency exchanges, the fact that at the time no cryptocurrency was accepted by a state as legal tender.¹³⁹ Would the El Salvador regulation affect FinCEN's determination? The decision was only partially based in the lack of legal tender status for cryptocurrencies, and it is possible that legal tender status alone would not be enough to require treating

¹³⁸ Some authors have suggested a "reflexive" legal approach to cryptocurrencies which acknowledges that the space will continue to be developing and that many actors in the space will continue to be seeking means to subvert legal restrictions. Thus, it can be argued that instead of attempting to effect a field-wide legal framework, or to create an international or national regulatory body dedicated to cryptocurrency, that the patchwork of legal issues can be solved in this multi-faceted way, which may be inherent to the space itself. See MOTSI-OMOJIJADE, I. D. CRYPTOCURRENCY REGULATION: A REFLEXIVE LAW APPROACH. Routledge. (2022).

¹³⁹ DEPARTMENT OF THE TREASURY, *supra* note 20, at 1.

cryptocurrency exchanges as foreign currency exchanges rather than money transmitters. In particular, that guidance noted that “virtual currency does not meet the criteria to be considered ‘currency’ under the BSA [Bank Secrets Act], because it is not legal tender.”¹⁴⁰

In analyzing whether the El Salvador regulation would affect this determination, it may be important to consider that the El Salvador regulation also sets that Bitcoin can be directly converted by the El Salvador government. Thus, Bitcoin virtual currency may be exchanged for El Salvador’s state fiat currency. Currently, El Salvador uses U.S dollars as its only fiat currency. (Fluctuations in the U.S Dollar price, and El Salvador’s relative inability to control these fluctuations through monetary sovereignty was one driving force for the Bitcoin legal tender legislation.)

As the FinCen guidance clearly states: “A person must exchange the currency of two or more countries to be considered a dealer in foreign exchange.”¹⁴¹ Thus, it is likely that even if the El Salvador regulation is enough to warrant considering Bitcoin a currency under the Bank Secrets Act, while El Salvador only provides convertibility into U.S dollars, and the cryptocurrency exchanges still refrain from operating in multiple countries’ currencies, there is no need to move from a money transmitter designation to a foreign currency exchange designation. Even if cryptocurrency exchanges remain outside the realm of foreign currency exchange designation, would a determination that Bitcoin meets the currency definition under the Bank Secrets Act have further ramifications?

While some argue that the public ledger system of Bitcoin and other cryptocurrencies leaves no need for the BSA, the reality of cryptocurrency exchanges is that they operate through maintaining their own cryptocurrency wallets, while only making actual transactions on the ledger if a user requests to move cryptocurrency funds into a private wallet.¹⁴² This strategy can save on transaction costs and time delays for the exchange, but means that these off-ledger transactions are not publicly disclosed through the ledger. Thus, FinCEN authority to regulate cryptocurrencies has found support in recent lawsuits.¹⁴³

¹⁴⁰ DEPARTMENT OF THE TREASURY, *supra* note 20, at 5.

¹⁴¹ DEPARTMENT OF THE TREASURY, *supra* note 20, at 5.

¹⁴² Ciarabellini, J. *Cryptocurrencies' Revolt Against the BSA: Why the Supreme Court Should Hold That the Bank Secrecy Act Violates the Fourth Amendment*. 10 SEATTLE J. TECH. ENVTL. & INNOVATION L., 135. (2020).

¹⁴³ *United States v. Mansy*, No. 2:15-cr-198-GZS, (D. Me. May 11, 2017); *United States v. Faiella*, 39 F. Supp. 3d 544, 545–46 (S.D.N.Y. 2014); *United States v. Budovsky*, No. 13-cr-368, (DLC) (S.D.N.Y. May 3, 2021); *United States v. E-Gold, Ltd.*, 550 F. Supp. 2d 82, 88–93 (D.D.C. 2008); *Ulbricht*, 31 F. Supp. 3d 540, 570.

On the other hand, a recent law review note questions if the Supreme Court ruling in *Carpenter v. United States* (2018) (which noted the danger of allowing the government warrantless access to seemingly all-encompassing data) has opened the door for using the public ledger and the Bitcoin users expectation of privacy (the court in *Carpenter* rejected the government's argument that *Carpenter* had voluntarily shared his data with third party companies through using their products) as a means to strike down the BSA entirely.¹⁴⁴ While that note argues that the BSA could be eliminated in view of the court's argument in *Carpenter* that the warrantless search of comprehensive data may be a Fourth Amendment violation and the Bitcoin ledger's maintenance of just such a comprehensive data pool, the more reasoned approach regarding regulation of cryptocurrency exchanges operating on off-ledger transactions may be to continue BSA reporting requirements for them.¹⁴⁵ Considering the variability of Bitcoin sending mechanisms and their inability to always fit within the confines of traditional money transmission or exchange services, it has been argued that the BSA definitions are obsolete.¹⁴⁶ While state money transmitter regulations also exist, these appear inappropriate to apply to cryptocurrency businesses because of the networked nature of cryptocurrency transactions, though in general state money transmitter regulations tend to focus on preventing fraud against their citizens while federal money transmitter regulations are concerned with money laundering and financial record-keeping.¹⁴⁷

Even within the realm of anti-money laundering, the federal BSA record-keeping regulations are arguably more of a means of providing criminal evidence after a crime becomes known, rather than a means of effectively preventing or detecting crimes, simply due to the vastness of the financial data reported.¹⁴⁸

While the El Salvador regulation may have some effect on the FinCEN decision regarding treatment of Bitcoin as not a "currency," that effect is likely to be below the quanta necessary to support a determination that Bitcoin is a currency under BSA. Because the El Salvador regulation only provides a means to exchange Bitcoin for U.S dollar, and does not provide any meaningful control

¹⁴⁴ Lloyd, C. *The Privacy Revolution Begins: Did Carpenter Just Give Bitcoin Users a Chance to Strike Down the Bank Secrecy Act?* 88 GEO. WASH. L. REV., 204. (2020).

¹⁴⁵ *Carpenter v. United States*, 138 S. Ct. 2206, 585 U.S. 2018, 201 L. Ed. 2d 507 (2018).

¹⁴⁶ Davidian, R. *Anti-Money Laundering Laws for Bitcoin Exchanges*. AMERICAN CRIMINAL LAW REVIEW, 36. (2017).

¹⁴⁷ Goforth, C. R. *The Case for Preempting State Money Transmission Laws for Crypto-Based Businesses*. 73 ARK. L. REV., 301, 312-318. (2020).

¹⁴⁸ Linn, C. J. *Redefining the Bank Secrecy Act: Currency Reporting and the Crime of Structuring*. 50 SANTA CLARA L. REV. 407, 409. (2010).

over Bitcoin to the El Salvadoran government that would be comparable to monetary sovereignty, it is not clear that the regulations determination that Bitcoin “is legal tender” would have met the BSA’s standard for currency of a country even if FinCEN accepts *arguendo* that Bitcoin is legal tender of El Salvador.¹⁴⁹ Finally, even if the FinCEN decision were to swing towards a definition of Bitcoin as currency, rather than only money, the effect on cryptocurrency exchanges and users would likely be nonexistent. This change would not change the FinCEN guidance’s main effect of dividing the cryptocurrency economic agents into “users, exchangers, and administrators.”¹⁵⁰

State cryptocurrencies provide a particularly interesting area with regards to the issues raised in this paper surrounding the legitimacy afforded to cryptocurrencies when given state backing. State cryptocurrencies and stablecoins present unique issues in the amount of control which states retain over them. Because their values tend to be largely controlled by the states themselves, they appear to be quite similar to state currencies and coin. The state can quite reasonably be said to be “issuing” these coins, and these cryptocurrencies (where they can be converted to amounts of the state’s physical currency) are readily equivalent to earlier forms of digital currency which simply provided the means to move away from physical coins and paper currency, while retaining the same functions of control that states hold over their currencies.

State cryptocurrencies and stablecoins may likely be treated as similar to state currency. One reason why this may not be a pure equivalent to digital currency is that the stablecoin market includes cryptocurrencies which are not state cryptocurrencies. These stablecoins are privately run blockchains which provide for exchange between state currencies and cryptocurrencies, facilitating cryptocurrency payments. These private, non-state, stablecoins may present particular risks to users who may mistakenly believe that the stablecoin

¹⁴⁹ 31 C.F.R. § 1010.100(m) (2022) defines currency as “coin and paper money of the United States or of any other country that is designated as legal tender and is customarily used and accepted as a medium of exchange in the country of issuance.” Bitcoin cannot reasonably be considered “customarily used” in El Salvador at this time, see Garcia, Marcela. *Nayib Bukele’s Failed Bitcoin Experiment in El Salvador*. The Boston Globe. *BostonGlobe.com*. Retrieved 2022-07-23. See also, Kurmanaev, Anatoly; Avelar, Bryan. *A Poor Country Made Bitcoin a National Currency. The Bet Isn’t Paying Off*. N.Y. TIMES. (Jun. 5 ,2022) <https://www.nytimes.com/2022/07/05/world/americas/el-salvador-bitcoin-national-currency.html>. (Last visited Jun. 9, 2022). Further, El Salvador cannot reasonably be considered a “country of issuance” with regard to Bitcoin, see *supra* Part IV.

¹⁵⁰ King, D. *Banking Bitcoin-Related Businesses: A Primer for Managing BSA/AML Risks*. (Retail Payment Risks Forum Working Paper. Federal Reserve Bank of Atlanta), 10. (Oct. 2015).

value is backed by the faith and credit of a government entity. For courts and regulators, specific issues may arise where stablecoin prices do not hold, and lawsuits or defaults follow this reversal of expectations.

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Recent Development of MASS and Guidelines in Japan*

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ABSTRACT

This paper introduces the current development of autonomous ships in Japan and the guidelines for autonomous ships established by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT); and it considers the liability of the owners of remotely controlled vessels and the phase II-type autonomous ships assumed by the Guidelines in case of a collision at sea.

First, it presents the experiments and development of autonomous ships in Japan, where shipping companies, rather than shipbuilding or engineering companies, have led the development of autonomous ships. For example, Nihon Yusen Kaisha (NYK) Group and many other companies spearheaded an autonomous vessel demonstration project called Designing the Future of Full Autonomous Ship (DFFAS). In this project, a conventional container vessel was equipped with autonomous navigation functions and allowed to navigate autonomously from the Port of Tokyo to the Port of Tsu-Matsusaka. Second, in connection with the development of autonomous vessels, the MLIT has recently established two types of guidelines; the “Safety Guideline for Remotely Controlled Small Vessels” in 2019 and “Safety Guideline for Autonomous Vessels” in 2022. This paper introduces the guidelines in Japan to consider legal issues regarding Maritime Autonomous Surface Ships (MASS).

Third, this study examines, based on these two guidelines and current laws, what liability would be attached to the owner or manufacturer of a vessel subject to the guidelines in the event of an actual collision.

KEYWORDS: Japan, Maritime Law, Maritime Autonomous Surface Ships, Safety Guideline for Remotely Controlled Small Vessels, Safety Guideline for Autonomous Vessels, Collision Liability, Product Liability

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*"The ship must be crewed if it is to be used as a vessel.
To imagine a vessel without a crew is meaningless under the admiralty law."*
Shikayoshi Ugaya, KAIHO (The Admiralty Law), (1942) at p.100.

I. Introduction

This paper introduces the current development of autonomous ships in Japan and the guidelines for autonomous ships established by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT); it considers the liability of the owners of remotely controlled vessels and phase II type autonomous ships assumed by the guidelines in case of a collision at sea.

First, it is worth highlighting a textbook regarding admiralty law by an old, but famous professor, Dr. Shikayoshi Ugaya, which states, *"the ship must be crewed if it is to be used as a vessel. To imagine a vessel without a crew is meaningless under the admiralty law."* This textbook was published in 1942 during the World War II. At that time, all the ships had to have a seafarer as an operator or a navigator on board and people could not imagine a ship with no crew. Autonomous ships are currently being developed worldwide with the most recent evolution of the ship being that of unmanned ships. Although no one knows whether an unmanned ship can be deployed in the near future it has recently become important to consider the appearance of vessel types from the perspective of maritime law. Therefore, this article proposes ideas for considering the legal issues in the relationship with maritime autonomous surface ships (MASS). I have already written papers on the legal issues related to MASS in Japan.

II. Development of autonomous vessels in Japan

This study introduces the experiments and development of autonomous

ships in Japan. In Japan, where shipping companies, rather than shipbuilding or engineering companies, have led the development of autonomous ships. For example, the Nihon Yusen Kaisha (NYK) Group and many other companies spearheaded an autonomous-vessel demonstration project called Designing the Future of Autonomous Ship (DFFAS).¹ In this project, conventional container vessels were equipped with autonomous navigation functions and were allowed to navigate autonomously from the Port of Tokyo to the Port of Tsu-Matsusaka. This autonomous navigation system was also equipped with an autonomous navigation support function from a shore-based operations center (a remote operational center) via communication. The experiment was successfully completed using the autonomous navigation system for maneuvering away from the shore, navigating in the bay, along the coast, on shore during a 790 km round trip journey from the Port of Tokyo to the Port of Tsu-Matsusaka. The systems used in this experiment included the following; ship-side systems responsible for autonomous functions; systems that monitor and support the ship from shore; and a stable communication system between the ship and shore. The DFFAS project is the world's first successful long-range and long-duration navigation system in diverse ocean environments.²

In this project, the autonomous ship had crew on board to keep watch from the deck to comply with current navigation regulations. However, the system could autonomously manoeuvre at sea without seafarers. One of the features of this autonomous vessel, named "Suzaku" is that it does not create a risk of collision with other ships under the Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGS). In case of a risk of collision, the navigational system can safely and autonomously navigate to avoid it. In addition, in case of emergency, when the situation is unavoidable, the system appropriately delegates the crew on board or remote operators on shore to manoeuvre the vessel.

In addition, the Nippon Foundation is supporting the research and development of autonomous vessels in Japan through a project called MEGURI 2040,³ the goal of which is to develop crewless vessels by 2040. More than 40 organizations, including companies and universities, participate in this support project.

¹ This project is introduced on this website

<https://www.monohakobi.com/ja/wp-content/uploads/2022/11/jasnaoe-prezen_20221118.pdf> (Last access 9/23/2023) [in Japanese] from a technical perspective.

² The detail of the experiment can be watched in this YouTube video made by the project team <available at <https://www.youtube.com/watch?v=oWy0I15OzmA>>, and it can be read on this website <<https://www.nippon-foundation.or.jp/en/news/articles/2022/20220301-67775.html>> (Last access 9/23/2023) [in English].

³ Available at <<https://www.nippon-foundation.or.jp/en/what/projects/meguri2040>> (Last access 9/23/2023).

III. Establishment of guidelines for autonomous vessels by the MLIT

A. Introduction

In connection with the development of autonomous vessels, the MLIT has established two types of guidelines: the “Safety Guideline for Remotely Controlled Small Vessels”⁴ in 2019 and “Safety Guideline for Autonomous Vessels” in 2022. This paper introduces the guidelines in Japan to consider the legal issues regarding MASS.

B. Safety Guideline for Remotely Controlled Small Vessels

1. Overview

This section presents an overview of the “Safety Guideline for Remotely Controlled Small Vessels” published by the MLIT in April 2019.⁵ As small vessels that can be remotely controlled by radio communication are becoming practical in Japan, this guideline organizes the relationship with the current law and defines the safety requirements for such vessels. However, remote control technology is still advancing, and the guideline may be revised on an ongoing basis in light of international trends.⁶

This guideline defines the application of relevant laws and regulations, as well as the actual procedures to be followed when operating a remotely controlled small vessel.

First, the remotely controlled small vessels to which this guideline applies are those of less than 20 gross tons, which are remotely controlled by radio communication. Vessels engaged in international voyages are excluded; therefore, this guideline does not apply to remotely controlled vessels with a gross tonnage of 20 or more, which must be used in accordance with current laws.⁷ In practice, restrictions apply to operating remotely controlled vessels that do not comply with current laws.

⁴ This guideline is available at <<https://www.mlit.go.jp/common/001287346.pdf>> (Last access 9/23/2023).

⁵ This “Safety Guideline for Remotely Controlled Small Vessels” was briefly introduced in Japanese at Kengo Minami, *JIDO-UNKOSEN-NO-JITSUYOKA-TO-HOSEIDO-ENO-EIKYO* (Implementation of autonomous ships and its impacts on the legal system), 244 *KAIJI-HO-KENKYU-KAISHI* (Journal of maritime law research) 2 (2019): pp.8-9.

⁶ *Id* at p.1.

⁷ *Ibid*.

2. Relationship with the Small Vessel Registration Act

First, this paper addresses the Small Vessel Registration Act. Japan's Small Vessel Registration Act provides for the registration necessary to authenticate the ownership of small vessels. As remotely controlled small vessels are also included in "small vessels," they must be measured in gross tonnage and registered in accordance with the Small Vessel Registration Act. The Japan Small Vessel Inspection Corporation is responsible for this procedure.⁸

3. Relationship with the Ship Safety Act

However, issues related to the Ship Safety Act. Japan's Ship Safety Act may arise. Japan's Ship Safety Act stipulates the requirements for structures and facilities to ensure ship safety. The Ship Safety Act also provides guidelines for ship inspections. As the current Ship Safety Act stipulates structures and facilities that are designed to be manned, its relationship with remotely controlled small vessels that do not carry people is problematic. In addition, the current Ship Safety Act has no provisions for radio equipment for radio control; therefore this guideline adds safety requirements for radio control.⁹ First, it is important to note that the Ship Safety Act grants these exceptions to remotely controlled small vessels. Article 1, paragraph 4 of the Regulation, delegated from the Ship Safety Act, recognizes this category of special vessels. The regulation also defines remotely controlled small vessels as special vessels,¹⁰ and it is a ministerial ordinance, rather than laws; it has the advantage of being able to establish regulations quickly in accordance with technological developments. The standards set forth in the current Small Vessel Safety Regulations apply to remotely controlled small vessels. Furthermore, the guideline requires remotely controlled small vessels to comply with the safety requirements for radio control. Conversely, it also indicates that equipment standards that require a person to be on board do not apply to remotely controlled vessels that do not have the capacity for people.

Therefore, what standards does the guideline apply to remotely controlled small vessels? First, since remotely controlled small vessels are operated by remote control via radio communication, they must comply with safety requirements pertaining to radio control. The safety requirements for radio control indicate that, first, the vessel must be equipped with a function that enables control of the vessel's engine and steering gear by radio communication, and second, the vessel must be equipped with a function in case that the vessel's engine and steering gear cannot be controlled due to a breakdown in radio

⁸ Ibid.

⁹ Id. at p.2.

¹⁰ Id. at p.1.

communication.^{11 12} However, unmanned remotely controlled small vessels with no crew on board are exempt from the requirements of the Ship Safety Act, such as requirements for wireless telegraph, for equipment as specified in the Small Vessel Safety Regulations, for drainage facilities; for the provision of mooring lines and anchors, among other requirements related to steering; for life-saving appliances; for firefighting equipment and provision of such equipment; for accommodation, egress, etc.; and navigational equipment.¹³ As these requirements are based on the assumption that crew are on board, small remotely controlled vessels with no seafarer on board are exempted from installing these facilities.¹⁴

Then a competent marine authority conducts the inspections of remotely controlled small vessels.¹⁵ The method of inspection is to confirm the vessel's conformity by conducting efficacy tests. It should be noted that, in principle, the navigable area of such a remotely controlled small vessel is limited to within 3 nautical miles from the location where the vessel is remotely controlled.¹⁶

4. Relationship with the Act on Ships' Officers and Boats' Operators

The Act on Ships' Officers and Boats' Operators aims to promote the safe navigation of vessels by stipulating maritime engineering licenses and qualification requirements for navigating small vessels. In relation to this Act, the question is whether a license is required for those who remotely navigate a vessel, and whether a person who holds a license must be on board even a completely unmanned remotely controlled vessel.¹⁷ First, the Enforcement Regulation for the Act on Ships' Officers and Boats' Operators creates an exception for remotely controlled small vessels. The guideline then calls for the formulation of manuals on matters related to navigational zones, to the knowledge and abilities required to operate a remotely controlled small vessel, and to the system for conducting operations.¹⁸ The guideline then stipulates that unmanned operations may be conducted through radio control only when the minister approves that safety measures have been taken. Therefore, as a person who intends to operate a remotely controlled small vessel must obtain

¹¹ See, the Appendix 1 of the Guideline. Id at p.5.

¹² In case of the breakdown in radio communication, the functions can make the ship engine stop or the ship idles.

¹³ This includes binoculars, barometer, compass, nautical charts and so on.

¹⁴ See the Appendix 1 of the Guideline. Id. at pp.5-6.

¹⁵ In general, the Japan Craft Inspection Organization conducts the small ship inspection on behalf of the government. According to this guideline, the inspection of the remotely controlled vessels regulated by this rule is exceptional.

¹⁶ Id at p.2.

¹⁷ Id at p.3.

¹⁸ Ibid.

approval from the minister, the guideline stipulates that he/she must consult with the MLIT in advance.¹⁹

5. Relationship with the Seafarers Act

The Seafarers Act regulates the working conditions of seafarers and the authority of a vessel's master. In principle, the Japanese Seafarers Act does not apply to vessels weighing less than five gross tons. Therefore, the guideline states that no conflict with the Seafarers Act exists if the remotely controlled small vessel has a gross tonnage of less than five tons.²⁰

6. Relationship with the Marine Pollution Prevention Act

The Marine Pollution Prevention Act regulates fuel oil, exhaust gases, and waste discharged from ships. The guideline states that the Marine Pollution Prevention Act allows no exceptions and it applies to small remotely controlled vessels.²¹

C. Safety Guideline for Autonomous Vessels

1. Overview

The MLIT has also established the "Safety Guideline for Autonomous Vessels,"²² which had many detailed rules for MASS except for the remotely controlled small vessels. This guideline does not apply to remotely controlled "small" vessels because this type of vessel has already been regulated by the guideline for the Remotely Controlled Small Vessels. The Safety Guideline for Autonomous Vessels only applies to phase-II MASS, which are ships navigated by a remote-control operator or autonomous navigation system with the crew on board responsible for maneuverings.²³²⁴

The guideline consists of three sections: (1) guidelines related to the design of autonomous navigation vessels; (2) guidelines for the installation of autonomous navigation systems; and (3) guidelines for operating vessels with autonomous navigation systems.

¹⁹ Ibid.

²⁰ Id. at pp.3-4.

²¹ Id. at p.4.

²² This Guideline is available at <<https://www.mlit.go.jp/maritime/content/001461734.pdf>> (Last access 9/23/2023).

²³ Id. at pp.1-2.

²⁴ From this point, this Guideline does not apply to full autonomous ships. In general, it seems that it would be impossible to use the full autonomous ships without crew in practice under current laws in Japan.

2. Key terms in this Guideline

Before presenting the detailed content of this guideline, an explanation of some key terms used in it is in order.²⁵

The term “autonomous system” as used in this guideline refers to a system that automates part of or all decision-making subtasks by means of a computer system or combination of computer systems and humans. A “remote control system” is also a system that enables some of or all the decision-making subtasks to be controlled remotely. One of the entities that must comply with this guideline is the “system owner.” The owner of the vessel on which the autonomous or remote-control system is operated. Typically, this would be the shipowner or shipping company; however, if the shipowner delegates the role of operating the ship using the autonomous or remote-control system to another company, the operating company is also considered to be the “system owner.” In addition to the System owner, the person who designs and supplies the system is referred to as the “system supplier” (e.g. the system manufacturer), and furthermore, the person who plays a role in integrating the supplied system is positioned as the “system integrator” (e.g. manufacturer or shipyard).

3. Basic concept of the guideline

The guideline first indicates the significance of autonomous vessels, namely, to reduce maritime accidents caused by human factors. Then it defines the following nine concepts for autonomous vessel maneuvering and autonomous berthing and unberthing.²⁶

1. Seafarers are on board and ready to respond to emergencies at all times.
2. The final decision-maker is the seafarer on board.
3. The equipment and facilities used in the automation system are sufficiently reliable.
4. The tasks to be performed by the autonomous system are clearly defined.
5. The division of roles between humans and computer systems in the tasks to be performed by the autonomous system is clear.
6. The autonomous system’s operational design domain (ODD) is identified.
7. If the autonomous system deviates from the ODD, the ship’s crew takes over the task appropriately.
8. Seafarers on board vessels equipped with autonomous systems have access to adequate education and training.
9. The vessel is equipped with the necessary books for the proper operation of the autonomous system.

²⁵ The Guideline, *supra* note 22, at p.1.

²⁶ *Id.* at p.2.

These concepts indicate that crew members cannot fully rely on the automation system and that they are the final decision makers.²⁷

Next, the following 10 ideas are presented for remote maneuvering;

1. Remote maneuvering includes both remote control and remote assistance by radio communication.
2. Remote maneuvering includes cases performed both within and beyond visual range of the remote maneuver.
3. The crew is on board and ready to respond to emergencies at all times.
4. The final decision-maker is the seafarer on board.
5. The tasks to be performed by the remote-control system are clearly defined.
6. The division of roles between the ship and remote-control center in the tasks performed by the remote-control system is clear.
7. The ODD of the remote-control system is identified for both the ship and remote -control center.
8. If the remote-control system deviates from the ODD, the ship's crew takes over the task as appropriate.
9. The necessary means of communication between the vessel and the remote-control center have been established.
10. Seafarers on board vessels equipped with remote control systems can receive adequate education and training.

These concepts indicate that, even in the case of remotely controlled vessels, the crew on board is the final decision maker regarding the vessel's operation. Given these points, it can be assumed that in the event of a collision involving an autonomous vessel, the discussion will be based on the assumption of negligence on the crew's part.²⁸

Furthermore, the guideline also presents an approach for the remote control center.

1. This guideline envisages centers with equipment capable of performing remote ship operations.
2. The remote-control center's equipment and facilities are sufficiently reliable.
3. The remote-control center's operator designates a remote operator with sufficient knowledge and competence for the remote-control task.
4. The remote operator is proficient in the operation of the remote-control center equipment and facilities and understands the remote-control system specifications.

²⁷ Id. at pp.2-3.

²⁸ Id. at p.3.

5. The remote-control center provides the remote-control operator with appropriate education and training in operation and knowledge.
6. The remote-control center has the necessary books on the remote-control system.
7. The remote-control center should post the procedures to be followed in the event of communication breakdown or instability in a place easily accessible to the remote operator.
8. The remote-control center should perform regular maintenance of the equipment and facilities, taking into account the system supplier's recommendations.

4. Matters relating to the design of autonomous vessels

When designing an autonomous vessel, system suppliers and integrators must ensure that the design is safe and based on fail-safe principles. This guideline sets out, the key rules for designing autonomous vessels.

When designing an autonomous vessel, the designer must establish the ODD. This is then defined by the scope and conditions of operation of individual autonomous vessels and autonomous systems, depending on their performance and the manner in which they are used. The scope and conditions of the operation include: (1) geographical conditions (e.g., route width and distance from shore), (2) environmental conditions (e.g., day, night, weather, sea conditions, congestion, and communication conditions), and (3) other conditions (e.g., navigation restrictions and support from port facilities).²⁹

In the event of an emergency, such as when an autonomous system deviates from its ODD, the emergency must be recognized and reliably dealt with by the seafarer. For this reason, the guideline states that means for information exchange between autonomous systems and humans (human-machine interface) must also be established.³⁰

The guideline requires that in the event of malfunction of the autonomous system, the emergency response system should allow seafarers to maneuver the vessel appropriately. Therefore, the seafarer's role must be clearly defined so that they can respond appropriately in the event of an emergency. This must be considered when designing autonomous vessels for example, in a design that enables the seafarer to continue the task with a simple operation in the event of an anomaly in the autonomous system; one that anticipates the time required for the seafarer to complete the task handover and the range of possible collision avoidance responses, so that the task can be handed over to the seafarer; and one that makes the emergency alarm easy for the seafarer to understand. The system design ensures that seafarers can easily understand emergency

²⁹ Id. at p.4.

³⁰ Id. at pp.4-5.

warnings.³¹ Furthermore, in order to investigate the causes of maritime accidents that occur during a voyage, the vessel must be equipped with a device that records data on the operation of the autonomous system and seafarers' standby status. It is stipulated that these data should be stored for at least two years.³² It should be also noted that from the perspective of ensuring cyber security, such measures should be implemented in the autonomous system.³³

Although above measures related to autonomous vessels, the guideline also includes content related to the design of remotely controlled vessels. For example, system suppliers and integrators must consider the performance of communication devices in their design. For example, when setting the ODD of a remotely controlled ship, it is necessary to consider the communication delay, capacity and availability. In addition, remote-control facilities and equipment capable of displaying the location of the ship's operating authority on board must be installed.³⁴

The guideline also states that it is important for system suppliers, system integrators and system owners to verify the safety in the established operational design area by means of risk assessment before conducting operations. Furthermore, system suppliers must create a manual regarding the autonomous system and share it with system integrators and system owners.³⁵

5. Matters to consider when installing autonomous systems

The guideline also specifies matters that a system integrator must consider when installing an autonomous system on board a vessel.

First, as a general matter, when installing an autonomous system on board a vessel, the system integrator must ensure that the system is properly connected to the equipment and facilities installed on the vessel and that they work together as designed. In fact, the system integrator is required to perform this check before conducting a system integration test to ensure that the system will not malfunction due to wiring errors, etc. Specifically, the system integrator should confirm that the construction work required to install the devices and equipment comprising the autonomous system is in accordance with the design. It must also be confirmed that the equipment and devices comprising the autonomous system are properly connected and that the autonomous system is correctly assembled on the vessel carrying it. Other details that must be verified

³¹ Id. at pp.5-6.

³² Id. at pp.6-7.

³³ Id. at p.7.

³⁴ Id. at pp.8-9.

³⁵ Id. at pp.9-10.

include the autonomous system's software compatibility, version, and critical parameters,³⁶ which have been properly set by the system supplier.³⁷

After the autonomous system is installed, the system integrator must verify that it functions properly as designed. They must also ensure that the autonomous system's ODD is reasonable for the vessel on which it is installed and that it is feasible to properly hand over control of the vessel from the system to the crew should the autonomous system fail. More specifically, the autonomous system must be properly alerted as to its operational status and ODD; handover between the crew and the autonomous system must be properly performed, risk mitigation measures must be taken, and recording devices must function properly, prior to navigating at sea.³⁸

In addition, if the autonomous vessel has remote control capability, the system integrator ensures that the working environment is conducive to performing a remotely controlled function. The guideline requires the system integrator to have predefined procedures for conducting tests in actual sea areas and refer to a manual in the event of an emergency. In addition, autonomous vessels must have a manual for the autonomous system at a location that is easily accessible to the crew.³⁹

6. Matters about operating an autonomous vessel

As a general rule, the system owner shall ensure that when operating a vessel with an autonomous system, the vessel is properly manned by a crew that meets the following requirements:⁴⁰

The crew

1. is proficient in the operation of the autonomous system,
2. has a correct understanding of the autonomous system's ODDs, and
3. can properly take over the vessel's operation when the vessel deviates from the ODD of the autonomous system or when the autonomous system malfunctions.

To have the above-mentioned seafarers on board an autonomous vessel, the system owner should provide appropriate education and training to the seafarers using the autonomous system for the purpose of gaining proficiency

³⁶ Critical parameters are important parameters that affect a vessel's safety. Critical parameters include, for example, parameters related to stranding and collision hazard determination (Id. at p.9).

³⁷ Id. at p.11.

³⁸ Id. at pp.11-12.

³⁹ Id. at p.13.

⁴⁰ Id. at p.14.

in and knowledge of the system's operation. The guideline also indicates the content of such education and training, including the following⁴¹;

1. The nature of the tasks that seafarers are responsible for when autonomous systems are operating.
2. The autonomous system's ODD.
3. The risks involved when using the autonomous system.
4. The autonomous system's operation.
5. Procedures for dealing with hazards that seafarers may face when operating the autonomous system, as identified by the risk assessment.

Additionally, efforts should be made regarding the operation of autonomous systems to ensure that seafarers who are not involved in their use do not accidentally use them. Therefore, the guideline requires system owners to consider passwords and physical methods of protection against unintentional changes to the contents of critical parameter settings.⁴²

Furthermore, the guideline addresses the maintenance of autonomous systems. The system owner must be aware of the appropriate version of the autonomous system, based on information from the system supplier and the system integrator. The system owner must ensure that any changes to the autonomous system's version do not compromise its interoperability with the information gathering and hull control equipment to which it is connected. If the autonomous ship being used has remote-control capabilities, the system owner must be clear about who is responsible onboard the vessel during remote maneuvering and the procedures to be followed in the event of a communication breakdown. The necessary means of communication between the vessel and remotely controlled facility must be ensured. The system owner should implement and record when these maintenance controls are performed.⁴³

⁴¹ Id. at pp.14-15.

⁴² Id. at p.15.

⁴³ Ibid.

IV. The guidelines and MASS owner's liability in case of collision⁴⁴

A. Introduction

Next, this paper examines, based on these two guidelines and current laws the liability of the owner or manufacturer (producer) of a vessel subject to the guideline in the event of an actual collision. Then, this paper examines collision liability separately for each of the vessels covered by these guidelines. That is, the cases of a remotely controlled small vessel without a crew, of an autonomous vessel with a crew, and of an autonomous vessel with a crew and a remote operator on shore.

B. The MASS owner's liability in case of collision.

1. The case of remotely controlled small vessels without a crew

The Guideline for Remotely Controlled Small Vessels permits the operation of remotely controlled small vessels without a crew. This paper presents whether the owner of a remotely controlled small vessel without a crew is liable for damages to the owner of another vessel if, due to the remote operator's negligence, the vessel collides with another vessel. In the case of a vessel with no crew, Article 690 of the Japanese Commercial Code provides that "the shipowner of a vessel shall be liable for damages caused to others by the master or other crew members intentionally or negligently in the performance of their duties." According to this Article, the shipowner is liable for damages when the "master or other crew members" have been negligent. The question then becomes whether the "master or other crew members" were negligent when the vessel collided with another vessel due to the negligence of the remote operator on land. In fact, an older Japanese case held that the "master and other crew members" are crew members. Namely, the Kobe District Court stated that "'master and other crew members' means a person who is broadly employed *on board* a vessel and engages in labor on board."⁴⁵ If one assumes such a stance, then a remote operator on shore cannot be included in "a person engaged in labor on board a vessel." However, as Article 690 of the Japanese Commercial Code is understood to be a rule for corporate liability, under which a company is liable for damages caused by hiring a crew or workers, the Article

⁴⁴ This section is partially based on my published research about the shipowner liability for damages caused by a collision of autonomous ships in Japanese (Kengo Minami, JIDO-UNKOSEN-TO-SHOTOTSU-SEKININ (The liability for damages by a collision of autonomous ships). 64 KAIHO-KAISHI (The report of the Japanese Maritime Law Association) 85 (2020). For a discussion and references in Japan, see this paper.

⁴⁵ Judgement of Kobe District Court, 20 November 1964, 15 KAKYU SAIBANSHO MINJI SAIBAN REISHU [KAMINSHU] 2790 (Japan).

may be applied by analogy even in the case of the remote operator. Even if it is difficult to apply the Article, as a kind of vicarious liability, the employer's liability provision of Article 715 of the Japanese Civil Code can also be applied.⁴⁶⁴⁷ Therefore, even if the remotely controlled small vessels covered by the guidelines were to cause a collision, the framework of current laws would be sufficient to deal with the situation.

2. The case of the phase II type autonomous ships with crew on board

Autonomous ships covered by the Safety Guideline for Autonomous Vessels introduced in Section 3 are of the phase II type. In this case, the vessel is normally navigated using an autonomous system; however the crew overrides the maneuver when the vessel deviates from the ODD or when an emergency situation occurs, as requires by the guideline. If this type of autonomous vessel is involved in a collision, is the shipowner liable for any damage to other vessels caused by the accident? As the crew is the final decision maker and the responsible party for this type of autonomous ship, if the autonomous system was working properly and a warning was issued but the crew did not respond appropriately, the crew would be found negligent, and the shipowner employing the crew would be held liable. Moreover, in the case of such an autonomous ship, even if the crew members were allowed to fully rely on the autonomous system, they would not always be exempt from proper watchkeeping.⁴⁸ Thus, the crew is completely dependent on the autonomous system, with the same consequences for failing to avoid a collision.

This guideline for autonomous vessels is soft law and non-binding. However, it sets forth what the shipowner must comply with, and if a shipowner

⁴⁶ Ryoichi Kasahara, *JIDO-UNKOSEN-TO-SENPAKU-SHOTOTSU-NI-OKERU-MINJI-SEKININ* (The civil liability for damages caused by a collision of autonomous ships). 250 *KAIJI-HO-KENNKYU-KAISHI* (Journal of maritime law research) 2 (2021): p.7.

⁴⁷ Article 690 of the Commercial Code and Article 715 of the Civil Code show some gaps. One is whether an employer as a shipowner can be exempted from liability when the employer/shipowner has no negligence in monitoring and appointing the employee/crew. In the case of applying Article 690 of the Commercial Code, the shipowner cannot be exempted from liability even when the shipowner has no negligence in monitoring and appointing the crew. On the contrary, if Article 715 of the Civil Code is applied, the employer/the MASS owner can be exempted from these liability. However, only the four older cases exempted the employer from liability. Therefore, it is generally stated that two Articles are not different in practice from the viewpoint of the employer's/shipowner's negligence in monitoring and appointing. *SHIN-CHUSHAKU-MINPO* (New Commentary on the Civil Code) Vol.16, (Tadashi Otsuka ed., 2022) at p.159, Noboru Kobayashi, *SHIN-KAISHO-HO* (New Maritime Commercial Law), (Revised ed., 2022) at p.62.

⁴⁸ According to the guideline, the ship shall comply with current laws such as the Ship Safety Act, the Maritime Transportation Safety Act, the Act on Preventing Collision at Sea (Japan COLREGS) and so on (The Guideline, *supra note 22*, at p.3). Therefore, under the Japan COLREGS, the crew cannot be exempted from watchkeeping on the deck (Art. 5).

operates an autonomous ship without complying with this guideline, that in itself could be viewed as the shipowner's own negligence.

3. The case of an autonomous vessel with a crew and a remote operator on shore

Finally, if an autonomous ship with a crew and a remote operator is involved in a collision, what is the shipowner's possible liability? The guideline states that, except for remotely controlled small vessels covered by the guideline for Remotely Controlled Small Vessels, a seafarer must be on board an autonomous vessel that can be navigated remotely. The final decision maker is the ship's crew on board, not the remote operator. The guideline does not permit crew members to fully rely on the autonomous system or remote operator to steer the vessel as they must keep a proper lookout at all times. Thus, if a crew member were to trust autonomous system or the remote operator to navigate the vessel and cause a collision, the crew member would be at fault. The shipowner would then have to compensate the other shipowner for the damages caused by the accident due to crew member's negligence.

C. The product liability

If a vessel operated by an autonomous system is involved in a collision, can the autonomous system's shipbuilder or designer, who is not the shipowner, be held liable? Article 3 of the Japanese Product Liability Act provides as follows:

“The manufacturers, etc. are liable to compensate for loss or damage, if death or bodily injury to others or infringement of property of Others are caused by a defect in the delivered product, which was manufactured, processed, imported, or on which indications including a name referred to in item (ii) or item (iii) of paragraph (3) of the preceding Article are used; provided, however, that this does not apply if the damage occurs to the product alone.”

The Article states that the manufacturer is responsible for damage to the product. Thus, the manufacturer is liable if the product is defective at the time of delivery and a causal connection is found between the defect and the damage. This “product” of this Article is limited to movable property, and a vessel or an autonomous system that is part of a vessel is movable property.⁴⁹ The manufacturer would then be liable if it were proven that the autonomous system had a defect and that the defect caused the vessel to collide with another vessel. The question, then, is whether the autonomous system was defective. The

⁴⁹ For discussion about the product liability in Japan, see Yoshio Shiomi, *FUHOKOI-HO II* (Tort law II), (2nd ed. 2011) pp.365 et seq.

Japanese Product Liability Act does not exclude applicability to a vessel; therefore, if an autonomous ship with a defective autonomous system causes a collision with another ship due to these defects, the ship or system's manufacturer may be responsible for the collision. In this regard, no substantial difference exists between autonomous and conventional ships, and perhaps, the only difference is the difficulty of proving a defect under the Act. When considering this issue, the guidelines established by the MLIT become important. They also specify issues related to the design and installation of autonomous systems. Although compliance with these guidelines is not legally mandated. They can be viewed as criteria for determining the presence or absence of defects.⁵⁰ If a manufacturer, as a system supplier or system integrator, designs or installs an autonomous system in a manner that differs from these guidelines without a just cause, they may also be liable for any damage caused. In other words, the MLIT guidelines can be used as part of the product liability determination factors (but not absolute criteria). However, this is only appropriate for autonomous vessels covered by these guidelines, and the case for more developed autonomous vessels is left for further discussion.

V. Conclusion

As the research and development of autonomous ships has progressed in Japan, the relationship with current laws has become an issue. To address this, the MLIT has prepared safety guidelines for remotely controlled small vessels and phase II type autonomous ships. The reason for adopting guidelines rather than laws is that they can be amended flexibly in line with developments in autonomous ships. The guidelines organize the relationship with current laws and set certain standards to ensure the safety of autonomous ships. Although they are not laws and are therefore not mandatory, if an accident occurs, these guidelines would be one factor to consider for liability.

⁵⁰ In Japan, the fact that an administrative safety regulation has been violated does not mean that a defect exists. However, in general, violation of administrative safety regulations would be indicated as an important circumstance to consider. *Shohisha-cho-shohisha-anzenka, CHIKUJO-KAISETSU-SEIZOUBUTSU-SEKININ-HO* (Commentary on the Product Liability Act), (2nd ed. 2018) at p.83.

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CASE NOTE

Barton v Morris [2023] UKSC 3

*Farqaleet Khokhar**

ABSTRACT

The oral contract stipulates payment of an amount on satisfying a condition, but the contract is silent in specifying the payment for service if such condition is not fulfilled; Thereby, this issue invited the Supreme Court of the United Kingdom to discuss the silence of the contract in Barton v Morris [2023] UKSC 3. This note is limited to the critical analysis of reasons which the Supreme Court used to interpret the implied term in a contract.

KEYWORDS: Silence, Contract, Implied term, Unjust enrichment, Contractual allocation of risk, Remuneration of estate agent.

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- I. Facts
- II. Decision and Comment
- III. Conclusion

I. Facts

Foxpace Ltd owned a property in London, Nash House, which was on sale. Mr Barton, a developer and a property dealer, wished to purchase 'Nash House' on two separate occasions, but he failed; as a result, he suffered a £1.2 Million loss to forfeit fees and deposits. After the failure of "Nash House's second sale", Mr Gwyn-Jones, the sole director of Foxpace, on the company's behalf, concluded an oral contract with Mr Barton provided that Mr Barton would be paid £1.2 million if he successfully introduced and secured a purchaser for Nash House at a sale price of £6.5 Million or above. Thus, Barton introduced Western Ltd to Foxpace, and Western Ltd agreed to purchase Nash House at £6.55 Million. However, the Nash House was sold at £6 Million to Western Ltd. The valuation of Nash House was affected by its location in the region, which was safeguarded due to HS2 rail line construction. The controversy was generated when Barton asked for payment, and Foxpace refused, and most importantly, their contract was silent to address what would happen if the Nash House was sold for less than the fixed £6.5 Million.

II. Decision and Comment

In the High Court, Judge Pearce declined the claim of Barton on the ground that he failed to fulfill the contractual condition of selling Nash House at £6.5 million ([2018] EWHC 2426 (Ch) at [161]). However, the value of Barton's service was summed as "£435,000" (at [214]). Judge Pearce convincingly assessed this value of service after perusing the previous agency agreements for Nash House sales in which "6.7%" and "7.8%" fees were fixed on the agreed purchase prices. He evaluated "7.25%" to estimate the amount of £435,000 for service as the midpoint of the previous agreement's two percentages (at [207], [213], [214]). Moreover, Judge Pearce declined the claim of "unjust enrichment" on the ground that it would not only undermine contractual terms but also interfere with the parties' independence in their obligations' allocation (at [191]) see *MacDonald Dickens v Costello* [2011]

EWCA Civ 930). The Court of Appeal unanimously allowed the appeal ([2019] EWCA Civ 1999). The reason that unjust enrichment could undermine the parties' independence in the contractual allocation of risk was rejected by Asplin and Males LJ. They concluded that as there was no allocation of risk where the sale price of the property was less than £6.5 million; subsequently, the contract was silent on this situation, there was nothing to debar the "claim of unjust enrichment" (at [33],[34],[35],[62],[63]).

Asplin LJ stated that the same consequences could be retrieved by invoking an implied contractual term, albeit it was neither contended at the Court of Appeal nor the High Court that there was an implied term about the reasonable remuneration (at [41]). However, in the views of Davis LJ, unjust enrichment was not a remedy for this case. He further added that "rather, reasonable remuneration is payable as a matter of quantum meruit pursuant to an implied term" (at [75]). The Judgment of the Court of Appeal was overruled and the appeal of Foxpace was allowed in the Supreme Court ([2023] UKSC 3). Leading the majority, Lady Rose (with whom Lord Stephens and Lord Briggs agreed) found that Foxplace was not under obligation to pay remuneration if Nash House sold for less than £6.5 million because contractual terms did not bind it. Her ladyship disagreed and considered the argument defective and irrelevant that there was nevertheless an obligation on Foxpace to remunerate £1.2 Million as the contracting parties never agreed that such a fixed amount will be paid "if, and only if" Barton secured the purchaser for 6.5 Million. She pointed out that on a specific occurrence, Barton was entitled to payment and considered it impossible to re-write their agreement beyond this (at [25],[26],[28]). Lady Ross added that there existed no implied term in fact or law for reasonable remuneration (at [32], [76]). Moreover, she rejected the unjust enrichment claim and reasoned that it would not sit well with the contract (at [107]).

The Minority comprising Lord Leggatt (at [111]) and Lord Burrows (at [120]) dissented with the majority decision. Lord Burrows stated that any default law as a gap filler would be applied in impugned silence of contract, which is the "law of unjust enrichment" that is a proper remedy when the contract runs out (at [227], [239], [269]) while Lord Leggatt thought that there is no ample space for an unjust enrichment claim as there exists an implied contractual term for the reasonable remuneration (at [189]).

Barton relied on section 15(1) of the "Supply of Goods and Services Act". He argued that if a person agrees to provide service under a contract and the contract is silent in determining the consideration for the service, the implied term for reasonable remuneration invokes. Lord Burrows (majority agreed) held that the "contract in question was a unilateral contract and Mr. Barton was not agreeing to do anything" hence, there was no statutorily implied term (at [202], [211]).

Nonetheless, an estate agent can be remunerated on the basis of implied

contractual terms. Lord Burrows took the view that the scope of reasonable remuneration covers not only the estate agents but also commission or introduction contracts (at [219], [220] see *Jaques v Lloyd D George & Partners Ltd* [1968] 1 WLR 625; *Luxor (Eastbourne) Ltd v Cooper* [1941] AC 108). To this end, the Supreme Court unanimously decided that under common law, the term will be implied for reasonable remuneration of the estate agent if he agrees to introduce a purchaser for a property and a sale takes place to that purchase (at [56], [149], [219]). The majority considered Barton's case different in the context of reasonable remuneration rights of estate agents because Barton was not a professional agent, as Foxpace did not approach him for providing a purchaser (at [69], [70]). However, the core spirit of an estate agent contract is satisfied when the sale of the property is completed with the party introduced by the agent. The seller is required to pay the agent for his service irrespective of who proposes the agreement (*Fowler v Bratt* [1950] 2 KB 96 at [104],[105]). Barton introduced the purchaser, so he functioned like an estate agent and could be remunerated for his service as one that renders service should not be left unremunerated. The subsisting contract was silent on whether reasonable remuneration would be given if the sale occurred at a price less than £6.5 million. Crucially, there was no exclusion of an implied term (as per Lord Burrows at [225]). However, the majority disagreed and reasoned that the implied contractual term is excluded on the silence of the contract as to what obligations arise on the occurrence of any specific event (at [96]).

Whether it can be presumed that it was a bad deal for Foxpace; either he would pay £1.2 million on the satisfaction of a contractual condition, or Barton would receive reasonable remuneration for his service if he fails to satisfy the condition. It is not a function of the court of law to rewrite the bad bargains, but it is the role of the court to interpret implied terms because the contract in the present case falls into a particular category, so the implied contractual terms inevitably arise [*Marks and Spencer plc v BNP* [2015] 3 WLR 1843].

The well-established requirements for exclusion of implied terms in the English Courts' jurisprudence include; first, if there is an express exclusion of implied terms in the contract [*Societe Generale, London Branch v Geys* [2013] 2 WLR 50; *Lister v Romford Ice* [1956] UKHL 6; *Liverpool City Council v Irwin* [1976] 2 All ER 39] Second, if there exists inconsistency between express contractual terms or proposed implied terms [*Holding and Management (Solitaire) Ltd v Ideal Homes Ltd* [2004] EWHC 2408; *Interactive Investor Trading Ltd v City Index Ltd* [2011] EWCA Civ 837].

The view of the majority generously germinated a seed of uncertainty that implied terms in law can be excluded, in some specific situations, without express wording, which seems problematic and misfit with the full-fledged first requirement. Additionally, the majority view did not sit comfortably with the second requirement because there is still a need to answer when and how substantive inconsistency between the implied and express terms arises as in

Barton's case the contract included a term for the payment for the service on fulfillment of condition simultaneously there is no express provision for not providing remuneration on failure to fulfill the condition.

III. Conclusion

The majority's decision in the Supreme Court seems less friendly towards the interpretation of the contract's silence because they have exaggerated the requirement of express exclusion of implied terms which is uncertain and does not sit well with the established jurisprudence. The exclusion of implied contractual terms should be subjected to a two-fold test of whether there is an express exclusion of it or inconsistency between express contractual terms or proposed implied terms.

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