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Electronic payments and international sales of goods: new challenges

INTRODUCTION

This article purports to comment on the intersection between electronic payments and international sales of goods. It describes potential transformation that new methods of paying imply for international trade, and eventually, for the interpretation[1] and application of relevant frameworks such as the United Nations' Convention on the International Sales of Goods (CISG)[2].

The sequence adopted for approaching the subject matter starts with a chapter on the history of currencies and of payments, which positions electronic payments in the context of progressive dematerialization and popularization. That sequence continues with explanation on regulatory implications, indicating possibilities and constraints originated from different domestic national models. References to international aspects follow, qualifying rules, policies and practices that circumscribe use of electronic paymens in overseas transactions.

Repercution of prior topics for the interpretation of the CISG is the focus of the subsequent chapter, pointing out certain hypothesis and possible options. Finally, a conclusion summarizes the main aspects of this article, emphasizing the increasing relevance of electronic payments, and the opportunity they represent for keeping the CISG interpreted in line with contemporary developments in the international sales of goods.

I. ELECTRONIC PAYMENTS: HISTORY, AND NEW PHENOMENA

Electronic payments have become predominant in international sales of goods since the lauching and widespreading of the Swift[3] protocol for electronically

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1 The Advisory Council to the CISG has been sensitive to digital phenomena such as electronic contracting, which was the subject of its Opinion n.° 1, providing guidance on proper interpretation of the CISG *vis-à-vis* electronic contracts formation.

2 As well as for the United Nations' Convention on Electronic Communications in International Contracts.

3 "In 1973, 239 banks from 15 countries got together to solve a common problem: how to communicate about cross-border payments. The banks formed a cooperative utility, the Society for Worldwide Interbank Financial Telecommunication, headquartered in Belgium. Swift went live with its messaging services in 1977, replacing the Telex technology that was then in widespread use, and rapidly became the reliable, trusted global partner for institutions all around the world.

wiring payments. Although Swift was a major innovation, the profile of users of its products was limited by the sophisticated operational infrastructure and high costs required.

Therefore, operation of electronic payments was initially associated with banks, being supervised by financial regulatory authorities. In contrast, technological developments have nowadays enabled virtually everyone to send money electronically[4], possibly without assistance from banks[5], inclusively for purposes of paying for international acquisition of goods.

The different characteristics of those two periods[6] suggest that payments technology is an important ingredient for determining the volume of transactions and the portfolio of participants in international trade.

As a matter of fact, the current scenario points to a booming number and high diversity of international business deals, as a result of the growing ease[7] for sending payments abroad, which is likely to to induce adaptation of domestic and of international rules.

The main components of the original services included a messaging platform, a computer system to validate and route messages, and a set of message standards, which were developed to allow for a common understanding of the data across linguistic and systems boundaries and to permit the seamless, automated transmission, receipt and processing of communications exchanged between users. Having disrupted the manual processes that were the norm of the past, Swift is now a global financial infrastructure that spans every continent, 200+ countries and territories, and services more than 11,000 institutions around the world." (https://www.swift.com/about-us/history).

4 See Gilberto Martins de Almeida, "M-Payments In Brazil: Notes On How A Country's Background May Determine Timing And Design Of A Regulatory Model", Washington Journal of Law, Technology & Arts, vol. 8, Issue 3, Special Symposium issue entitled "Mobile Money in Developing Countries: Financial Inclusion and Financial Integrity"; 8 *Wash. J. L. Tech.* & *Arts* 347 (2013), http://digital.law.washington.edu/dspace-law/handle/1773.1/1203; p. 349.

5 "Unlike legal tender, electronic cash may not be generated by central banks; rather, some of it may circulate outside the Federal Reserve-monitored banking system. Once it is outside that system, it may become untraceable, immeasurable and, as a result, a threat to economic stability" (Ellen d'Alelio, and John T. Collins, "Electronic Cash under current Banking Law", in *The Internet and Business: a Lawyer's Guide to the Emerging Legal Issues,* The Computer Law Association, 1996, p. 105.

6 Which are even more different to each other as users move to more convenient payments means. Such move may be ilustrated with statistics from Brasil, comprising the period 2005-2010, where the number of transactions with debit cards increased in 157%, while the use of credit transfers has grown only 62%, and the use of checks has decreased 34%.

7 Alexandre Claire *et al., Regulating New Banking Models that Can Bring Financial Services to All* (Bill & Melinda Gates Found.), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1664644).

That makes convenient to verify how and to what extent the history of currencies and payments has affected the evolution of international trade, and how the stage represented by electronic payments connect within such fascinating history[8].

The original means of paying in exchange for acquired goods (*medium of exchange*) consisted in tangible assets such as cattle, cotton, sugar, salt, and other materials, easily tradeable, originating the expression *commodity money*. The physicality of those "currencies" certainly provided payment receivers with a reassuring sense of security and of fairness.

Gradually, however, that exchange of goods for other goods (as we may qualify then-existing currencies, which both maintained their original condition of goods and were also converted into means of payment) was replaced with a "symbolic" exchange, where acquired goods had their price paid by a determined amount of currency expressed in something that had the only function of indicating the level of purchase power recognized by the State.

That is when the concept of coin was created, as a metal piece which shape or image was associated with an amount of actual "money", legal tender. In that context, it is understandable that the first coins reproduced the image of animals —the prior "monies"—, setting a bridge beween the former notion of "physical" currency and the new, of "symbolic" currency.

The next step was the shift from metal to paper, when merchants (especially the ones in Venice or Lyon, commercial "hubs" of that time) started to use certificates containing a promise of equivalent money, fostering trade throughout Europe and Asia.

Then, from paper to electronic means[9], when digital "book money" was developed, promoting dissemination two times faster than prior ones in such history[10]. In reality, the advent of the *Information Age* has brought new connotations not only to money, then expressed in electronic data[11], but also to

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8 For a description on that history, see Moema Augusta Soares de Castro, *Cartão de crédito: a monética, o cartão de crédito e o documento eletrônico*, Rio de Janeiro, Forense, 1999, pp. 21-22.

9 For a more detailed description on the history of electronic payments, see Etienne Wéry, *Paiements et monnaie électroniques. Droits européen, français et belge*, Bruxelles, Larcier, 2007, pp. 17-22.

10 Bringing advantages to users is essential for changing their habits (Marc Bourreau and Marianne Verdier, *Cooperation for Innovation in Payment Systems: The Case of Mobile Payments*, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1810892), and explains the speed of popularization of certain means of payment.

11 The different categories of electronic money were described in Mostafa Hashem Sheriff,

payments, as the innovative methods operated by portable computers and mobile phones[12] have caused remarkable improvements in the storing and sending of money, to the point of justifying that payments are qualified by the technology used (as in the case of *mobile payments*[13], or simply, *m-payments*)[14].

The latest step in that sequence is a genre of electronic money[15] denominated "cryptocurrency", digital files with no correspondence to "analogic" beings or experiences at all. Although they consist in means of payment[16], their singularities have caused for the generation of new ways of issuing and delivering money which may ultimately be considered as payment methods. Actually, bitcoins and the likes may be issued (in the specific jargon, "generated") by anyone who performs data mining[17] (that is, intensive data processing),

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Paiements électroniques sécurisés, Lausanne, Presses Polytechniques et Universitaires Romandes, 2007, pp. 44-46.

12 Mobile payments have advantages over more conventional means of payment such as credit cards (and over payments via more conventional equipaments such as computers) for ensuring a practical way to make small payments and for enabling peer-to-peer direct transactions [see *Online Law. the spa Legal Guide to Doing Business on the Internet* (Thomas J. Smedinghoff, ed.), Reading, Addison-Wesley, 2000, 114].

13 New technology mobile equipment rival with personal computers in the making of electronic payments, and have greater portability advantage over them (see Étienne Wéry, *op. cit.,* p. 22).

14 M-payments are, fundamentally, technology-based payment methods comprising three basic modalities: mobile phone as a wallet (storing money downloaded via internet, or "reading" it from a smartcard), payment ordered via short messaging service (SMS) , and payment by bringing mobile phone into contact or close proximity with some tagged device (using technologies such as Near Field Communication, or NFC). (Martins de Almeida, *op. cit.,* p. 351).

15 EC Directive 2009/110/EC (E-Money Directive), Article 2, (2): "Electronic money means electronically, including magnetically, stored monetary value as represented by a claim on the issuer which is issued on receipt of funds for the purpose of making payment transactions as defined in point 5 of Article 4 of Directive 2007/64/EC, and which is accepted by a natural or legal person other than the electronic money issuer".

16 On the opposite side of the debate, Norman Donald, co-founder of Bitcoin Consultancy Ltd., defends that bitcoin is cash ("It's cash, digial cash. It can be used to buy and sell goods and services"). Interview published on David Skinner, *Digital Bank. Strategies to Launch or Become a Digital Bank,* Marshall Cavendish, 2014, p. 248.

17 Joshua Davis visited a bitcoin miner for an article published on The New Yorker and described the room where the data was processed: "One wall was lined with four-foot-tall homemade computers with blinking green and red lights. The processors inside were working so hard that their temperature had risen to a hundred and seventy degrees, and heat radiated into the room. Each system was a jumble of wires and hacked-together parts, with a fan from Walmart duct-taped to the top. Groce had built them three months earlier, for four thousand dollars. Ever since, they had generated a steady flow of bitcoins, which Groce exchanged for dollars, averaging about a thousand per month so far. […] Still, he was proud of the powerful computing center he had constructed. The machines ran non-stop, and he could control them remotely from his

and traded for whatever value the community of that cryptocurrency users may collectively assign to it. Clearly, a typical phenomenon of the "New Economy" (or "colaborative economy").

Such retrospect portrays increasing social tolerance to risk[18] as regards money "volatility" (as governments soon started to largely produce "symbolic" money, and gradually loose control over massive flows), "frauds" (as "symbolic" money might be easily reproduced), or even unenforceability[19] (slight softening of the concept of *fiat money*, which means currency regulated by the State for imposing mandatory acceptance). Effectively, risk tolerance was the price to pay in order to enjoy the increasing "mobility"[20].

In a word, by moving from mainframes (where Swift[21] applications were run), to personal computers and smartphones, electronic payments have followed a path that has ultimately led them to the reach, literally, of their users' fingertips who may swipe smartcards (magnetic or chip-based plastic or metal cards) at readers, or type the electronic address of web pages of digital wallets (*online* payment gateways that verify and confirm payors' data). In such a new world, everyone can be an international trader in the sale or acquisition of goods.

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iPhone. The arrangement allowed him to cut tobacco with his father and monitor his bitcoin operation at the same time". Available at http://www.newyorker.com/magazine/2011/10/10/the-crypto-currency.

18 A survey in Brazil has detected that 71 % of respondents would consider replacing credit or debit cards with mobile phones, and 66 % would be willing to use mobile phones to manage bank accounts, while 59 % were suspicious about the safety of the service, and 15 % have mentioned fear of suffering mobile phone cloning. (Sandra Turchi, *Fique por Dentro do Mobile Commerce e Mobile Payment,* at http://www.blogdoecommerce.com.br/mobile).

19 As in the case of bakruptcy of a major generator of bitcoins, which creditors could not enforce their rights since that individual or company was unknown, therefore the venue was also undetermined, and the circumstances of a possible fraud were not sufficiently unveiled.

20 "With respect to the state of the regulatory environment, the modus operandi for agencies is playing catch-up at this point. Cyber crime laws and regulation, especially when it comes to the financial/banking sector, are not moving at the same pace as the technological advancement that has taken place within the past ten years. More and more banking services and transactions are moving away from the physical brick-and-mortar space to embracing a new business model based on the philosophy of a customer gaining access to and utilizing his or her finances whenever and wherever he or she wants. Mobile banking and in general wireless data transmission appear like a target in the spotlight for cyber criminals". (Zeinab Karake Shalhoub, and Sheibkha Lubna Al Qasimi, *Cyber Law and Cyber Security in Developing and Emerging Economies,* Cheltenham, Edward Elgar, 2010, pp. 35-36).

21 Admittedly, even Swift is currently looking for innovations opportunities through its new program Innotribe, "an initiative to find new ideas and new porjects and to establish the infrastructure that will enable them to grow". David Skinner, *op. cit.,* p. 300.

II. REGULATORY IMPLICATIONS

The concept of money directly relates to the definition of currency, which is the basis for regulation on the free flow and compulsory acceptance of payments. With regards to the dual function of money —namely, financial expression, and payment instrument—, it seems reasonable to think that the older generation of electronic payments met both, while cryptocurrencies meet only the second one, as they do not have face value.

Therefore, latest-generation electronic currencies may or may not be strictly qualified by national jurisdictions as "money". Actually, some producers and users of such currencies intend to create an "international" cryptocurrency, which might circumvent (if that is at all possible) the constraints of sovereign domestic regulations.

Although countries' Central Banks have been generally reluctant to encourage the use of cryptocurrencies, tax authorities in some jurisdictions have officialy acknowledged their existence, either to charge tax over their production or use, or to require information on possession of those assets above a certain amount.

Such different approaches toward cryptocurrencies may result in a dichotomy where citizens and businesses may be deemed as taxpayers while financial authorities recommend caution. That split recognition may trigger questions on how safe is that currency considering that certain authorities have acknowledged its usage while other authorities have done the opposite.

Besides the hesitation on regulating criptocurrency as a legitimate or safe investment, there are additional questions[22] which make building consistency among public stakeholders even more complex. That is the case, for instance, of the debate on whether delivery of cryptocurrencies characterize a payment, or telecommunication.

On one hand, cryptocurrencies are used for making payments, and every instrument of payment shall attract the attention of Central Banks,

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22 As pointed out in Martins de GILBERTO ALMEIDA, *op. cit.*, p. 353, most relevant issues are intertwined (for instance, privacy and consumer protection, and money laundering and tax evasion), and may be dealt with by the same authorities. Other issues are more closely related to certain regulatory areas (as in the case of anti-trust, or of intellectual property).

which are competent for regulating on phenomena which may have potential systemic effect[23].

On the other hand, cryptocurrencies are essentially data, transmitted electronically as if they were the contents of on-line messaging services; thus, should transmissions of cryptocurrences be treated as if they are value-added services, which make use of telecommunications platforms?

That discussion did not surface at the time Swift arose as the latest mechanism, though Swift was also an application through which funds would flow as data. Perhaps, the fact that money transfers have moved to the mobile sphere, exponentially multiplying the volume of users and of transactions, may explain the new challenge.

Other issues counterpose financial and telecommunications stakeholders: are currency transmissions via smartphone a telecommunications operation, or a financial operation[24]? which entities shall participate in their sourcing: telecom companies, or banks? ultimately, which authorities shall be invested with regulatory powers: telecom agencies, or Central Banks?

The number of questions seems endless. One might also ask, for instance, whether cryptocurrencies stored in a smartphone are technically equivalent to money deposits (although they are not *fiat money*), or whether the theft of a smartphone with that kind of money stored should be considered as a theft of money (notwthstanding the electronic passwords which may protect respective files against access by third parties).

Some questions may find answer in recent events. The "bankruptcy" of Silk Road[25], the largest bitcoin exchange channel, has caused losses to a subtantial number of people in many countries, and given the virtual untraceability[26] of bitcoin, no-one was found liable. Where the community of issuers and of users of cryptocurrencies is not officialy recognized and controlled, the

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23 That is why Central Banks used to be concerned, for instance, with bartering activities.

24 Such question has a great number of implications, for instance, on whether the secrecy applicable to such operations should be the banking secrecy, or the telecommunications, or both, and whether there might be comingling, or not. Also, how comprehensive shall be the duty of care? And to what extent should end-users share liabilities?

25 http://www.wired.com/2015/04/silk-road-1/

26 Traceability is one of the main requirements for responsible offering of electronic monies. See Cathie-Rosalie Joly, *Le paiement en ligne-sécurisation juridique et technique*, Paris, Lavoisier, 2005, p. 159.

"parallel" market eventually formed by it cannot offer sufficiently stringent legal remedies and institutional enforcement.

However, the incipient commercial sucess of cryptocurrencies has worked as an informal affidavit of its practical recognition. International chains such as Subway and Starbucks[27], and individual companies in the industries of air travels[28], lodging[29], e-commerce[30], and others, have accepted payments with use of cryptocurrencies[31]. That might point to the fact that although cryptocurrency transactions are often not covered by specific regulation, they may nevertheless be protected by general principles of law, either nationally or internationally. Less controversial than cryptocurrencies are mobile payments. Although they share with the former the uncertainty on which regulatory authority shall be competent for relevant regulation, there is a larger basis of consensus on the safety that can be achieved onnce a proper regulatory model[32] is selected.

Specifically, the most prudent regulatory approach seems to be the creation of a platform for a network of mobile payments where every cell phone account is associated to an individual bank account, so that there is direct and exclusive correspondence between the telecommunications held in that device and the moneys transmitted or stored in it. That may avoid problems seen in a certain jurisdiction[33] where a predominantly telecommunications-based

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27 For instance, using a specific application such as in https://coffee.foldapp.com/ .

28 There are specialized websites where flights can be booked using bitcoin, such as: https://btctrip.com/

29 Expedia reportedly started accepting bitcoin: http://www.coindesk.com/expedia-will-accept-bitcoin-hotel-bookings/

30 The website Shopify offers a list of merchants on Shopify's network accepting bitcoin. https://www.shopify.com/blog/10480345-75-places-to-spend-your-bitcoins.

31 Car rental with cryptocurrencies is still a delicate subject given the resistance from insurance companies.

32 In 2006, six years after the first specific Directives, there were only nine active electronic money issuers in Europe, while seventy-two institutions were in operation under the waiver set forth in the Electronic Money Directive for institutions which engaged in more limited financial operations. (Murray, *op. cit.,* p. 446).

33 Kenya, with the so-called M-Pesa, which was very successful as regards fast-pace popularization of electronic payments, fostering financial inclusion; however, the lack of links with the financial system has determined shortage of electronic money, and substantial concern with frauds; see http://www.imf.org/external/pubs/ft/wp/2014/wp14123.pdf and Ignacio Mas and Dan Radcliffe, *Mobile Payments go Viral: M-Pesa in Kenya* (Bill & Melinda Gates Found., 2010), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1593388) and Murray, *op. cit.,* p. 446.

model has originated a myriad of failures (loss of controls, frauds, shortage of money, and others)[34].

For countries of centralized exchange and exports, electronic payments, and particularly, cryptocurrencies, may be a threat to current regulations. In Brazil, the Central Bank has issued various norms on *payment arrangements*, and a bill of law in the Congress envisages establishing a match between mobile payments and the financial system (such as the one-to-one correspondence between individual numbers of cell phones and of bank accounts).

Such focus on building integrated structures may be a reasonable way forward, provided government can persuade telecom companies and banks to share a common platform, and to abide by additional regulation. Perhaps, the most inspiring case comes from New York City, in the United States of America. That municipality has recently enacted legislation regulating the issuance and sale of cryptocurrency, affecting transactions which have made use of it. In order to obtain licenses for issuing and storing cryptocurrencies, issuers are required to enroll in a specific registry and to comply with duties of minimum capital, as well as of disclosure and reporting. At the outset[35], there was great resistance from bitcoin companies, but market players have progressively incorporated those requirements into their business model, and the first bitlicense was granted late in 2015[36]. There have also been reports on players who have opted to operate outside New York City, though.

A different approach can be seen in India, which has adopted a mixed, financial and telecommunications-based regulatory model. Highlights are Mobile Payment Forum of India (MPFI), an umbrella organisation in charge of deploying mobile payments in India, Interbank Mobile Payment System (IMPS), a mobile based funds transfer service for users registered with

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34 Susie Lonie, *M-Pesa: finding new ways to serve the unbanked in Kenya,* 2010, International Food Policy Research Institute, http://www.ifpri.org/publication/innovations-rural-and-agricultural-finance-m-pesa. See also Mercy W. Buku and Michael W. Meredith, Safaricom and M-Pesa in Kenya: Financial Inclusion and Financial Integrity. *Washington Journal of Law, Technology & Arts,* University of Washington School of Law, vol. 8, n.° 3, 2013, p. 388, http://docplayer.net/710755-Washington-journal-of-law-technology-arts.html.

35 https://www.eff.org/deeplinks/2014/10/beware-bitlicense-new-yorks-virtual-currency-regulations-invade-privacy-and-hamper.

36 http://www.newsbtc.com/2015/09/22/first-ny-bitlicense-issued-to-circle-mobile-payments-company/

participating banks, jointly launched[37] by mobile network operators (MNOs) and banks to provide mobile banking services all over the Country, and the National Payment Corporation of India (NCPI), responsible forr all retail payments in the country, which is aimed at launching Unified Payment Interface (UPI), to enable peer-to-peer payments[38].

Germany has seen the flourishing of smartphone-only banking, where account opening and operation are managed exclusively via smartphones[39]. It is also the birth place of initiatives which merge traditional banking and e-banking, as Fidor[40], a branchless bank that offers free checking account and Smartcard and Mastercad Debit card, while stimulates crowdfunding initiatives and community advising[41].

In the U. S. A., several banks have started implemented "check deposits on the go", whereby users can take picture of a check with the camera of a cell phone and then send it to the bank for deposit[42]. In addition to traditional regulatory initiatives, normalization activities performed by standards organizations have created the basis for reliance on electronic payments in general, filling in the gaps of regulatory action. For example, the PCI framework has instituted methodologies aimed at providing enough information security for transactions which make electronic use of credit cards. Similarly, some organizations have developed standards for mobile payments.

In the end, it may be fair to say that electronic payments have counted on regulatory guidelines or on standards[43] for enhancing the credibility and trust that may help disseminate them. However, success will depend inclusively upon cooperation at the international level, so that heterogeneous treatments

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37 http://www.cgap.org/blog/mobile-payment-systemswhat-can-india-adopt-kenya%E2%80%99s-success, http://www.bbc.com/news/business-35341971.

38 http://www.zdnet.com/article/mobile-payments-ecosystem-comes-of-age-in-india/.

39 http://www.pymnts.com/news/2015/smartphone-only-bank-launches-in-germany/.

40 https://www.fidor.de/

41 Chris Skinner, *op. cit.*, p. 200.

42 A few banks have their own apps and specific rules (for instance, a certain bank asks for pictures from the front and the back of the checks). See http://www.gottabemobile.com/2011/06/13/9-banks-with-iphone-remote-check-deposit-apps/.

43 Although most standards are formally qualified as technical, some of them have procedural nature (which contributes to technological neutrality), such as Information Security standards (http://www.itu.int/itu-t/security/task_details.aspx?isn=4097&isnView=1&from=b1_-1!b2_-1!b3_-1!t1_-1!k_procedural) developed by entities such as ISO, IEC and ITU.

coming from regulatory action in different jurisdictions do not impair harmonization of interpretation of international sales of goods conducted by means of electronic payments.

III. INTERNATIONAL CONTEXT

Electronic payments do not only meet individual interests of businesses and of persons participating in International trade; rather, they are among the technologies acknowledged to pave the way for certain sustainable development goals embraced by the United Nations.

Such goals purport to reduce inequalities by promoting economic inclusion through the use of a technology-driven model aiming at (i) increase of users, (ii) with a broader portfolio (iii) at lower costs[44]. Of course, the private sector has been called to contribute towards achievement of those goals, by apportioning funding and innovation. There is room, then, for public-private partnerships at all levels, nationally and internationally.

Supportive attitude towards the use of technological advances to accelerate financial inclusion has been taken on by other international organizations as well, such as the World Bank, which has issued a report on bitcoins drawing a distinction between their use for possible speculation, and the configuration of Ponzi schemes[45]. Its conclusion is that although the informality intrinsic to cryptocurrencies may be a driver for the ambition of those interested in creating and exploiting "bubbles", cryptocurrencies may be used with rightful purposes instead, as some sort of readily available universal currency.

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44 "Shifting from cash to electronic payments allows for greater reach of a population at lower costs than cash and increases the transparency of fund transfers. Increased transparency supports better accountability and has the potential to reduce corruption. At the client level, electronic payments reduce the risk of loss of funds due to theft or fraud, increase clients' privacy and are often easier to access and faster, which means substantial savings for the household. They also enable better record keeping and control of finances that in turn contribute to improved capacity to invest in productive activities. Finally, they open doors for fee-for-service business models, such as health and crop insurance, previously unavailable due to high transaction costs". (https://business.un.org/en/documents/10922).

45 http://insidebitcoins.com/news/world-bank-report-bitcoin-is-not-a-ponzi-scheme/24346.

The Bank for International Settlements (BIS) has delivered in November, 2015 a report[46] indicating that cryptocurrencies simmultaneously offer negative and positive effects ("These could include potential disruption to business models and systems, as well as facilitating new economic interactions and linkages"[47]), emphasizing that cryptocurrencies may improve the efficiency of payment services, especially where intermediation would not be cost-effective.

However, the Basel Committee on Banking Supervision has pointed out[48] that

> Unprecedented speed of change related to technological and customer service innovation, the ubiquitous and global nature of open electronic networks, the integration of e-banking applications with legacy computer systems and the increasing dependence of banks on third parties that provide the necessary information technology [...] [have] increased and modified some of the traditional risks associated with banking activities, in particular strategic, operational, legal and reputational risks, thereby influencing the overall risk profile of banking [...] [therefore it] considers that while existing risk management principles remain applicable to e-banking activities, such principles must be tailored, adapted and, in some cases, expanded to address the specific risk management challenges created by the characteristics of e-banking activities.

To what extent national or international shall such framework be in order to aptly handle electronic payments in international trade is a question put to authorities in different countries. In the United States, the Department of the Treasury has concluded[49] that "Nation states may find unilateral enforcement of electronic money related rules difficult".

South Korea has experienced such difficulty when it attempted to establish a country-wide technological platform for carrying out electronic payments. The more consistent it envisaged the usage to be, the more "frozen" the selected architecture became, and ultimately, it was no longer compatible with up-to-date International options.

Operational difficulties faced by certain countries which have opted to build their own platform seem not to have weakened the change in attitude regarding electronic money —which was considered, in the 80's and 90's, as

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46 http://www.bis.org/cpmi/publ/d137.htm.
47 http://www.bis.org/cpmi/publ/d137.htm.
48 http://www.bis.org/publ/bcbs98.htm.
49 http://www.occ.treas.gov/topics/bank-operations/bit/intro-to-electronic-money-issues.pdf.

an illusion or as a threat— and is currently deemed as an important factor for ensuring financial inclusion[50]. Such evolution[51] in the mindset of authorities and of businesses, inclusively regarding its most controversial[52] form —cryptocurrencies[53]— may be a sign that its popularity shall grow consistently[54], with the formal support of important international organizations.

In a 2006 report on electronic payments, the OECD has indicated that one of the consequences of implementing new online payment systems is "some 'unbundling' of transaction services by third-party providers, introducing an additional layer into the payment process"[55], and further pointed out that

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50 http://www.coindesk.com/imf-world-bank-bitcoin-block-chain-financial-inclusion/.

51 "Virtual currencies. While financial institutions have been dealing with increasingly restrictive regulation and, on the other side of the spectrum, new technologies, another innovation disrupts the market: Virtual currencies. The most known example is bitcoin. Skepticism about the use of bitcoin and other so-called 'digital cryptocurrencies' is all over the place with comments such as 'stay away from bitcoin [...]. It is a mirage' or 'it's a terrible store of value', sponsored by Warren Buffet and Jamie Dimon, respectively. Nevertheless, this time the topic showed up in different agendas during the meetings in a much more constructive way. Nobody believes bitcoin or any if these will take over the world as the next global currency. In this context, some compared this to what happened with Esperanto, taking over the world's language of choice, which as we all know, has not happened at all. However, the digital protocol that gave birth to cryptocurrencies might be an initial 'layer' in which platforms or even full-blown payment systems can be built upon. The main nicety is that this protocol conducts real-time operations, in which value is transmitted, instead of the current use of corresponding banking, representing a liability for one of the counterparties, in both, simple money transfers and FX operations. This reduces transaction costs and counterparty risk. All in all, instead of perceiving a full rejection of cryptocurrencies, we observed a much more constructive assessment of these around its operational aspects to build more secure and cheaper-to-use payments systems". http://casadebolsabanorteixe.com/analisis/flashes/Economicos/IMF_WB_AnnualMeeting.pdf

52 Although improper implementation of mobile payments may be as detrimental or even more risky than bitcoins. See http://www.cgap.org/publications/bitcoin-vs-electronic-money.

53 "In short consumers only have confidence in cash tokens issued by, and/or guaranteed by either the central bank or government of the issuing state. This was the problem with cyberspace. There was no government, no central bank, and no pre-existing financial framework: only private organisations and competing technologies". ANDREW MURRAY, Information Technology Law. *The Law and Society,* 444 (2010).

54 There is, however, a multitude of opinions regarding the future of the most famous of cryptocurrencies, the bitcoin. Tech-savyy articles have either declared that bitcoin is virtually dead or that 2016 will be its biggest year yet. See: http://www.wired.com/2016/01/thought-bitcoin-was-dead-2016-is-the-year-it-goes-big/ and https://medium.com/@octskyward/the-resolution-of-the-bitcoin-experiment-dabb30201f7#.rodwuk2dh).

55 *Online Payment Systems for E-commerce*. Available at: http://www.oecd-ilibrary.org/docserver/download/5kz84p6kcv36.pdf?expires=1453484427&id=id&accname=guest&checksum=CEB88CB92A997AB59D9C192DF5C1512C

some non-financial institutions have played a crucial role in favor of online payments in certain jurisdictions.

To sum up, the international scenario depicts the irreversible reality of electronic money as a new paradigm in the evolution of money, and indicates convenience of adapting to such phenomenon. The same may apply regarding international sale of goods.

IV. TRENDS AND REPERCUSSIONS FOR INTERNATIONAL SALES OF GOODS

As pointed out above, the ease provided by electronic payments may imply a change in the volume and profile of international trade. In theory, every individual or business able to electronically paying for transactions shall be ready, from the standpoint of sending money, to enter into international acquisitions of goods, amplifying the spectrum of internationally accessible[56]markets.

Such forthcoming diversity of portfolio may make it convenient to revisit basic concepts associated with international sales, similarly to what has been done in light of electronic contracts[57], where expressions such as "writing", "reaches", "dispatch", "oral", "notice", and others present in specific articles of the CISG were interpreted[58].

With regard to the meaning of "goods", economically speaking, goods are tangible products available for trade. Legally speaking, "goods" have "variable content and meaning", with either an ample reach or a stricter meaning[59]. International contracts for aquisition of software[60] have been analyzed under the CISG in the course of case decisions focusing on the interpretation of

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56 The fact that many transactions do not contemplate high figures shall not be an impediment for application of the CISG (see LARRY A. DI MATTEO, *International Sales Law: A Global Challenge*, Cambridge, Cambridge University Press, 2014, p. 730, "Professor Schwenzer points out that many of the CISG case decisions involve relatively modest amounts of money").

57 The current e-scenario has even influenced the use of transferable records, as is being discussed by Uncitral. For more, please visit http://www.uncitral.org/uncitral/en/commission/working_groups/4Electronic_Commerce.html.

58 As per Advisory Council Opinion n.° 1, Electronic Communications under CISG, quoted before.

59 *Black's Law Dictionary,* 5th ed., West Publishing Co. 1979, p. 624.

60 CISG-online 1047. See also PETER SCHLECHTRIEM, *Comentários à Convenção das Nações Unidas sobre Contratos de Compra e Venda Internacional de Mercadorias* (Peter Schlechtriem, Ingeborg Schwenzer, Eduardo Grebler, Véra Fradera and César Guimarães Pereira, coords.), São Paulo, Ed. Revista dos Tribunais, 2014, p. 168.

"goods"[61]. Effectively, the Digest of Case Law of the CISG states that although the Convention itself does not set forth a definition of "goods", one should not resort to a domestic definition of goods[62]. It further clarifies that

> According to case law, "goods" in the sense of the Convention are items that are, at the moment of delivery, "moveable and tangible", regardless of their shape and whether they are solid, used or new, inanimate or alive. Intangibles, such as intellectual property rights, goodwill, an interest in a limited liability company, or an assigned debt, have been considered not to fall within the Convention's concept of "goods". The same is true for a market research study. According to one court, however, the concept of "goods" is to be interpreted "extensively," perhaps suggesting that the Convention might apply to goods that are not tangible[63].

The aforementioned interpretation points to a possible broadening of the scope of application of the CISG, and joins other interpretations which have accepted that transactions which establish definitive transfer of software fall under the sphere of application of the CISG irrespective of certain copyright[64] aspects and of form of delivery, having demanded that concepts such as risk transfer and conservation of goods be adapted[65].

The fact that software is generally formed of programming code and of data makes it possibly analogous to other electronic goods such as digital music, e-books, electronic art, databases, web sites, and others. Therefore, the interpretation conferred to software may be of interest for those goods, which, in most cases, are acquired by means of electronic payments, inclusively in international transactions[66].

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61 SCHLECHTRIEM, *op. cit.*, pp. 166-167.

62 The Digest provides comprehensive and uniform understanding on the Convention and is available at http://www.uncitral.org/pdf/english/clout/CISG-digest-2012-e.pdf, p. 6.

63 http://www.uncitral.org/pdf/english/clout/CISG-digest-2012-e.pdf, p. 7.

64 Copyrights *per se*, and other intellectual property rights, have specific treatment in international agreements such as the Trips. Furthermore, regarding taxation and royalties payments, several countries have historically entered into bi-lateral and multi-lateral agreement in order to avoid conflicts.

65 SCHLECHTRIEM, *op. cit.*, p. 168.

66 "While debate continues over the legal nature of transactions in intangible content, such as sound recordings and software, the possibility of trade in pure content clears away some of the physical cluster and shed light on the true nature of the transaction: when purchasing a music CD or software on a disk, one had never been essentially purschasing 'the song'or 'the program', but one had rather obtained a limited license to use the content in a certain specified ways". ANTONY TAUBMAN, "International Governance and the Internet", in *Law and the Internet* (Lilian Edwards and Charlotte Waelde, eds.), 3rd ed., Hart Publishing, 2009, p. 34.

The World Trade Organization (WTO) has recently faced challenges concerning classification of services and of trade in connection with intellectual property, and managed to arrive at a seemingly flexible model, stressing that "the perceived greater scope for protecting domestic cultural interests is one factor driving a complex debate about seemingly technical matter of how digital products should be classified as goods or as services [...]"[67].

As a matter of fact, the frontiers between code and data are increasingly diluted, as in the case of e-books, where a portion of the code may be more likely classified as software (such as the code that provides users with page-turning effects, being such routine associated with the mechanics of reading e-books), while other portions of the software may be seen as intrinsic to the "look-and-feel" of the pages of the e-book at hand, and tend to be sensed as internal to the "contents" of that work.

Such differentiation may have practical implications, for instance, tax authorities have been called to interpret whether code, or data, are preponderant in an e-book, so to respectively determine treatment as software (normally, not eligible for tax immunity) or as a book. Of course, the analogy between those goods and software should stick (at least, so far) to the patterns of interpretation already attributed to software, including the requirement that only definitive transfers should be deemed to be within the scope of application of the CISG. This seems to be an advisable measure of prudence.

Therefore, some popular forms of "acquisition", such as subscriptions for online access to movies, would be dependent upon whether that use is valid for a determined term of duration or whether the access has been licensed forever. Furthermore, to discern between a software license and a software rental (which, according to some jusridictions, is an acceptable concept) would bring even more nuances to such discussion[68]. Another progressive "dilution" of traditional concepts can be verified with regards to the distinction between purchase of goods and "purchase" of certain services which do not lead to permanent storage of the goods in the equipment of the "buyer".

Specifically, "Software-as-a-Service" (commonly known as the abbreviation "SaaS"), and "streaming" (which stands for availability of access to digital

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67 Antony Taubman, *op. cit.*, p. 39.

68 Under Brazilian Law, a software may be either licensed or rented for use. Each contract is subject to a different tax, due to the different rights it involves, granting either specific rights or possession of *corpus mysticus* and *corpus mechanicum*.

files for executing them, not for saving them) are increasingly popular as they do not require that the licensee keeps too much technological infrastructure or heavy digital files. "Cloud computing"[69] reinforces such trend, allowing that large amounts of data be stored in specialized data centers around the world.

In the referred cases, the buyer does not keep definitive physical possession of those goods, as they stay permanently with the seller, and are occasionally "run" by the buyer whenever so wished. However, in theory, if the buyer is offered to buy a "definitive" (rather than temporary) license to access those goods, the buyer may be in a position similar to that of a buyer who buys a definitive software license.

The universe of goods acquisitions often relating to electronic payments poses additional challenges for interpretation on the applicability of the CISG. With regards to the notion of "personal" use[70], the buyer's intention has been a helpful criterion for determining whether a particular transaction is eligible or not. However, certain goods usually bought on-line and paid electronically have shown mixed intentions (personal, and professional) on behalf of the buyer.

For instance, the so-called BYOD (Bring Your Own Device), a growing phenomenon of use of electronic devices, such as tablets or smartphones, in work environments. In those cases, buyer may be interested in acquiring those goods for mixed use (labor, and leisure), with no preponderant (at least, no *a priori* preponderant) intention. As a matter of fact, some statistics have evidenced that, particularly in highly demanding markets (including countries identified with cultures where the sphere of private life is not very much separated from the public sphere), the majority of employees like to use the same device both for private and for professional use[71].

In the event the device is acquired by the employer and offered to the employee (which has originated another expression, CYOD, "Choose Your Own

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69 "[…] cloud computing is and arrangemtent whereby computing resources are provided on a flexible, location-independent basis that allows for rapid and seamless allocation of resources on demand. Typically, cloud resources are provided to specifc users from a pool shared with other costumers with pricing, if any, often proportional to the resources used". CHRISTOPHER MILLARD, *Cloud Computing Law,* Oxford, Oxford University Press, 2013, pp. 3-4.

70 As per Article 2, (a), of the CISG.

71 The research (http://www.us.logicalis.com/infographics/byod/) quotes the examples of Brazil, Russia, India, and Malaysia as countries where employees mostly prefer to use a single device for professional and for personal purposes.

Device"), it would be clear that the device was acquired for commercial and/or professional reasons, thus there should be no doubt as to the applicability of the CISG.

However, when the employee buys via Internet, not indicating to the seller the finality of the acquisition, perhaps it may also qualify for application of the CISG, based on the actual circumstances of the case, assuming automatic exclusion would only take place[72] where the seller knew or should have known that the intent of acquisition was for personal (or domestic, or family) use[73].

The difficulty faced by seller to determine whether a sale has been made to an individual for professional or for personal activities use is also attributed to the increasing popularity of "home office", a practice encouraged by certain companies, and the option of choice for a number of individuals, to professionally work from home.

In such case, an order form or a tax receipt would appoint the home address as destination although the actual finality of the purchase was also (or, mainly) professional. To further the discussion, one should also consider the so-called *collaborative economy*, that is, an economic-social practice through which consumers get from each other whatever they need, keeping traditional commercial or professional institutions away.

The number of challenges put by international acquisitions of goods which are fostered by electronic payments is significant, another example of which is the matter of goods "to be manufactured or produced"[74], *vis-à-vis* goods which are ready at the time of order placement. Pursuant to the CISG, transactions involving such goods are included, provided services and labor force are not preponderant in the supply.

It seems worth pointing out that a substantial amount of goods acquired electronically do not exist in inventory at the time they are ordered. The ones which exist in electronic form are easily replicated, so it does not make much sense for the seller to produce (or better said, reproduce) them beforehand.

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72 SCHLECHTRIEM, *op. cit.*, p. 183.

73 Digest on the CISG, on determination of the purpose of the purchase: "To determine whether the intended personal, family or household use was apparent, resort is to be had, inter alia, to objective elements, such as the nature of the goods, the quantity of the goods and the delivery address. In case law, it has been pointed out that the Convention does not impose upon the seller an obligation to make inquiries into the intended use of the goods". Available at: http://www.uncitral.org/pdf/english/clout/CISG-digest-2012-e.pdf . Pg. 17.

74 According to Article 3, (1), of the CISG.

Actually, the concept of production, in that case, usually refers to a prior moment, where the good is conceived, in the course of the development phase. Therefore, perhaps "production" should be interpreted as comprising "reproduction". Such distintion is especially important where "immaterial" assets, protected by intellectual property, are present.

Reproduction, in such situation, would be equivalent to production in the sense that a copy would be produced, notwithstanding the intellectual work was available in advance (that is, already produced). Although the focus of this article is electronic payments in general, and cryptocurrencies do not correspond to an expressive number of international transactions for acquisition of goods so far, their characteristics may inspire some thoughts as well.

Given the fact that cryptocurrencies have been qualified by tax authorities in many jurisdictions as "assets"[75] while the local Central Bank has warned interested parties that they do not materialize legal tender, a question remais: are those assets, "goods"? If one assumes that the definition of "goods" shall be determined on an autonomous case-by-case basis[76], and that the rules of non-conformity may be a criterion for ascertaining what should be understood as a "good" [77], cryptocurrencies appear to meet many, if not all, the elements which connotate "goods".

In practice[78], cryptocurrencies are a medium of exchange accepted by some merchants that can be priced and traded in the form of digital files that may be "acquired". Since they are not *fiat money*, they are not (at least, not officialy), money. However, they are, still, units of account, like old "monies" such as cattle, cotton, and others[79], which were not *fiat money* either, but were even so traded as units of account. Should cryptocurrencies, then, be accepted as goods, similarly to the latter?

The answer should be no, as that analogy does not seem to be entirely appropriate. The other units of account had their own existence, independently

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75 Brazilian IRS has set forth rules characterizing bitcoins as financial assets and, as such, subject to income tax statement and to withholding over annual gains equivalent to a certain amount in Reals.

76 It is usually interpreted by Courts or in the course of arbitration proceedings (*A Convenção de Viena sobre Contratos de Compra e Venda Internacional de Mercadorias: desafios e perspectivas* [Silvio de Salvo Venosa, Rafael Villar Gagliardi, Eduardo Ono Terashuma, eds.), São Paulo, Atlas,2014, p. 30, 41].

77 SCHLECHTRIEM, *op. cit.*, p. 167.

78 Especially, targetting economic aspecs and relevant inputs.

79 See chapter 2 above.

of being traded as units of account. As a matter of fact, their preponderant function was not to serve as means of payment, and only became so due to their high level of importance in society, as traditional goods.

Cryptocurrencies are much different in such respect. They exist precisely to be used for payments, they do not have independent role (or at least, no other preponderant facet). Therefore, although cryptocurrencies may qualify as "assets", they should not necessarily be treated as "goods" for purposes of the CISG. It seems worth mentioning that cryptocurrencies may also be associated with services, as their production result from data mining, which can be ordered.

Also, the exchange of cryptocurrencies by official money is offered in the electronic marketplace, what might characterize a service. In neither case, however, such activities should be mistaken for "goods", in the context of the CISG. By the same token, other financial services offered on-line in connection with electronic payments should not qualify for applicability of the CISG. For instance, the so-called "payment gateways", technological and/or organizational mechanisms that bridge sellers and buyers by certifying their identity to each other, beyond electronic names or addresses. In principle, the findings indicated in this topic should be reviewed for possible consideration in the context of interpretation of the CISG.

V. CONCLUSION

The history of money and of payments demonstrate gradual dematerialization[80], accompanied of advantages (simplification, speed) convenient enough to persuade users to change their habits. Some other drivers may play important roles in promoting new payment methods. For instance, financial inclusion has been elected as a key component of social and economic sustainability, and is currently being acclaimed by international organizations as such.

The dissemination of Information Technology throughout every aspect of contemporary life, generating an array of new patterns and usages (*lex informatica*[81]), inclusively in international trade of goods, has brought about the need for adaptation of prior parameters. Although electronic money

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80 The dematerialization of money has followed dematerialization of related documents, such as of invoices. See ÉTIENNE WÉRY, *op. cit.,* pp. 17-19.

81 JOEL R. REIDENBERG, *Lex Informatica: the Formulation of Information Policy Rules*, Fordham

seems to have definitely prevailed over conventional bills and coins as an inevitable and irreversible reality[82], prudence and balance seem necessary to temper[83] certain extreme positions pursuant to which, "cash is trash"[84], and "Money 3.0"[85] should be the norm. Electronic payments, in general[86], shall be positively regarded as a phenomenon that can contribute to the promotion of international sale of goods, while providing a reasonably safe environment.

However, cryptocurrencies, in particular, shall be further investigated, as a possible source capable of maximizing potential benefits, and likely dangers, all at the same time. They may represent a new paradigm in the history of currencies, of a unit of account that is socially accepted to some extent and even regarded as "money", despite being neither *fiat money* nor independent good.

More and more, electronic payments are expected to provoke significant change to the mixed profile of participants in international sales of goods, mirroring substantial increase in the volume and diversity of transactions. The uniquenesses of goods and of methods involved in such transactions constitute several challenges to the intepretation of existing national and of international rules, inclusively of the CISG, giving room to a valuable opportunity for further update of the important collection of currently available scholarly work on the interpretation of the CISG.

University, 1997, at http://ir.lawnet.fordham.edu/do/search/?q=reidenberg&start=0&context=1572094.

82 PayPal's has in 2014 attracted four billion peer-to-peer online payments (being one billion of which made via mobile equipment) and has served 203 markets, in a hundred different currencies. Forecasts are that e-commerce currently amount in the U. S. to USD 220 billion, and shall grow to USD 370 billion by 2017. The rate of remote banking —including, Internet, Home and Office banking— per user in Brazil has multiplied by 125 in the period 2006-2011. https://www.paypal.com/us/webapps/mpp/about; http://www.adweek.com/socialtimes/data-growth-e-commerce-infographic/199692; http://www.bcb.gov.br/htms/spb/Diagnostico-Adendo-2011.pdf .

83 Some suggestions may be found at http://www.imf.org/external/pubs/ft/wp/2004/wp0419.pdf.

84 http://www.forbes.com/sites/techonomy/2014/01/23/cash-is-trash-the-future-of-mobile-payment/#7a5fe16a2e1c

85 *Money* 3.0*: How Bitcoins May Change the Global Economy*, http://news.nationalgeographic.com/news/2013/10/131014-bitcoins-silk-road-virtual-currencies-internet-money/.

86 Other possibilities may exist in the near future for operationalizing or representing electronic payments, such as electronic negotiable instruments, which have been the subject of study by a group of specialists assembled by Uncitral. Although Article 2 (d) of the CISG excludes negotiable instruments, they may enhance the popularity of electronic payments by facilitating on-line transactions.

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