

RESEARCH ARTICLE

What do we call money? An appraisal of the money or non-money view

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Abstract

Part of the debate fueled by cryptocurrencies has revolved around the question of what we call money. This paper identifies two traditions in monetary theory that have tried to answer that question. On the one hand, *the money or non-money view* follows a strategy proposed by a version of *philosophical essentialism*, in which there is a set of defining characteristics of money that make it categorically different from other things used in transactions. On the other hand, *the liquidity degree view* emphasizes that the multiple objects that circulate as a means of payment differ in their degree of acceptability. Since there is no absolute standard of liquidity, a precise dividing line between money and non-money cannot be drawn. We challenge *the money or non-money view*, arguing that there is nothing in the nature of money that can be interpreted as a natural kind essence by which money can be categorically separated from non-money.

Keywords: Essentialism; money; bitcoin; liquidity

1. Introduction

During a talk at Goethe University, Agustín Carstens, General Manager of the Bank for International Settlements, asserted that “the meteoric rise of bitcoin and other cryptocurrencies has led us to revisit some fundamental questions that touch on the origin and *raison d’être* for central banks.” One of those questions was precisely “What is money?” (Carstens, 2018: 1). Although we do not usually ask ourselves what money is, we are all competent in the practice of using banknotes, coins, checks, etc. Despite the ease with which we master the practice of using it, explaining money has proved to be an arduous task. While economists, historians, anthropologists, sociologists, and philosophers have made strides in improving our understanding of money we report that, to date, there is no consensus among scholars on the definition of money.

Therefore, what should we call money? Beyond national currencies such as dollars, euros, or pounds, which we all indisputably agree on calling money, it is more elusive and controversial to determine whether other things used in transactions should be called money. Are bitcoin, litecoin, dogecoin, or ethereum, to name a just few, money? The question asked so often entails the presupposition that there is a body of knowledge that enables us to produce a yes or no answer. Accordingly, it is thought that it is somehow possible to categorically distinguish money from non-money. Often, the question “is this money?”, along with its underlying presupposition, is prompted in economics from the outside, as illustrated by the case of cryptocurrencies. However, economists are not just receptors of an external demand for money or non-money classifications. Accurately dividing certain objects into money and non-money has historically been an objective within the discipline. We do not provide a careful historical account of the origins and current echoes of this classificatory ambition in economics. However, we detail a way of reading Menger (1892) that

exemplifies an early effort to differentiate clearly between those objects that are money and those that are not. We remark that for Clower (1967), a clear distinction between money and non-money was the natural starting point of monetary theory. Building on Friedman and Schwartz (1970), we also show that a number of economists who participated in the debate on the construction of monetary statistics sought to draw a sharp dividing line between money and non-money. Admittedly, they disagreed on the correct approach to drawing the dividing line.

To set our target in this paper clearly, a label should be introduced. We call the perspective that there is a set of defining characteristics of money that make money categorically different from other things *the money or non-money view*. The difference between money and non-money is a matter of kind and not of degree. On this view, therefore, it is possible to draw a precise dividing line between money and non-money. Recently, Smit *et al.* (2016) faced the question of whether bitcoin is or is not money. Beyond the merits of their answer, we believe that a great contribution of their work is that in placing their strategy on philosophical grounds, they allow us to discuss what would be needed for *the money or non-money view* to succeed. We draw on their work to illustrate the connection between *the money or non-money view* and the venerable philosophical discussion on the existence of *natural kind essences*. In particular, we show that for *the money or non-money view* to achieve its purpose, it should identify what is philosophically called the kind essence of money.

In the version of essentialism studied in this paper, a natural kind essence is understood as the set of characteristics that are referred to as the *intrinsic properties* that are *necessary and sufficient* for membership in a particular kind. The roots of traditional essentialism can be traced back to Aristotle, who was one of the first authors to express the idea that we can make classifications that reflect the *nature* of things. Such classifications are successful insofar as it is possible to identify *essences* that indisputably determine that an object or phenomenon belongs to one *natural kind* and not to another. Since then, different thinkers have taken up this idea, and some of them have begun to assert that the essences shared by all objects or facts belonging to a particular natural kind can be used in inductive reasoning to formulate universal laws. Some philosophers believe that Menger adopted an essentialist position as a basis for the construction of his work, notably his influential ideas on money.

We are interested in discussing the potential applicability of traditional essentialism to money. If applicable, economists could categorically distinguish, like chemists can with chemical elements, between money and non-money, and the aim of *the money or non-money view* would be achievable. In this paper, we challenge *the money or non-money view* and the traditional essentialism that this view endorses. For *the money or non-money view* to succeed, it is necessary that objects termed money are categorically distinct from those termed non-money. This is possible if, following traditional essentialism, a gradual transition between money and non-money never occurs. We therefore argue against *the money or non-money view* by criticizing the traditional essentialism underlying this view. Specifically, we point out that, based on what is currently known by monetary economists, there is no set of intrinsic properties that form the natural kind essence of money. Membership in the kind “money” is largely defined by *exterior* relations of objects and individuals with the determinants of fundamentals and beliefs about acceptability. Furthermore, we remark that it has not been possible to identify a set of necessary and sufficient characteristics, whether interior or exterior, for membership in the kind “money.” Consequently, there is nothing in the nature of money that can be interpreted as a natural kind essence that one could use to separate money unambiguously from non-money.

In contrast, we outline what we call *the liquidity degree view*. On this view, because objects are valued according to the degree to which they are accepted in trade, there is no absolute standard but rather a scale that reflects various degrees of liquidity. Not surprisingly, *the liquidity degree view* questions the purpose of drawing a sharp dividing line between money and non-money. A practical implication of *the liquidity degree view* is that the question of whether bitcoin is or is not money should be abandoned. Bitcoin can be described as a means of payment with a poor degree of acceptability.

Before we begin, two clarifications must be made. First, we do not produce an argument against versions of essentialism other than traditional essentialism. If what modern monetary economists have learned about money can support other essentialism variants, especially those that do not require a clear-cut distinction between different natural kinds, it is certainly a matter that will not be sufficiently explored here. Second, the dualistic framework used in this paper is a starting point for contrasting two general opposing views on what should be called money. However, we do not discard the possibility that a more fine-grained distinction could be established.

2. Natural kinds and essentialism

For those who lack training in philosophical matters, *natural kinds* and *essentialism* are terms that can sound odd. Because the discussion of *the money or non-money view* involves the use of such notions, in this section, we provide a succinct presentation of these concepts. This section also includes a brief description of how these ideas could have permeated Menger's paradigmatic work on money.

Scientific practices cover a wide range of activities. These practices include proposing ways of classification and methods for researching the results of such classifications. Philosophers of science have noted a fundamental distinction between at least two sorts of classification. There are classifications that are intended to capture real, existing divisions in the world, while other classifications are arbitrarily set for reasons of convenience, such as those involved in organizing or simplifying the complexity of a certain domain.

The idea of classifications that are successful in providing us with guidance on the world's own divisions is what some have called *natural kinds*. The discussion around this notion has a long history. According to Wilkins (2009), Locke was the first to introduce the term *kind* in English to replace *genos* and *genus*, while according to Hacking (1991), the term *natural kind* was coined by the logician John Venn in 1866. Ellis ([2002] 2014) traces the tradition of natural kinds back to Aristotle, who believed that the world ultimately consists of four elements (earth, air, fire, and water) and that all that exists can be separated into things that exist by nature, things that exist by art, and things that exist by chance. Things that are termed natural kinds are commonly the products of nature rather than products of art or chance.

An important figure in the modern tradition of natural kinds is J. S. Mill (Hacking, 1991). Hawley and Bird (2011) show that for Mill, horses formed a natural kind, but white things such as leukocytes, chalks, white vans, clouds, comets, and white dwarf stars did not. These things are too dissimilar to correspond to a natural kind group. The existence of natural kinds is regarded as supporting inductive reasoning. The knowledge of a kind's current members may justify inferences about new or hypothetical objects that arguably have the same kind of membership (Brigandt, 2011; Hacking, 1991).

According to Brigandt (2011), an account of natural kinds must explain how natural kinds differ from other kinds. One possibility is seeing natural kinds as characterized by an essence – some intrinsic structural property shared by every member of the kind and causing the distinctive properties associated with it. For a long time, essentialism was regarded as an old-fashioned Aristotelian philosophy. Nonetheless, as Ellis ([2002] 2014: 7–12) comments, this view changed with the works of Kripke and Putnam, who revived essentialism and made it “respectable” again. Under their influence, some came to believe that scientific investigation is the only way to discover the essences of natural kinds (Lowe, 2007). In short, when deciding whether an object belongs to a natural kind, it must be determined whether the object possesses a kind essence: that is, the set of intrinsic properties that are individually necessary and jointly sufficient for kind membership. Thus, the transition between distinct natural kinds cannot be gradual.¹

¹Khalidi (2013: 515) opines that essentialists are not united on the exact features that distinguish a natural kind. Nevertheless, for essentialists, each natural kind seems to be characterized by all or some of five features: “(1) properties that are necessary and sufficient for membership in the kind, (2) micro-structural properties, (3) intrinsic properties, (4) modally necessary properties, and (5) properties that are discoverable by science.”

Aristotle, essentialism, and Menger on money

The philosopher Barry Smith (1990: 263, 266, 270, 277) asserts that there are good reasons for adopting an Aristotelian reading of Menger's work. He believes that the doctrine of Austrian Aristotelianism is characterized by embracing at least seven theses, including the indication that there are strictly universal "essences" or "natures" in the world that are governed by strictly universal laws. They are strictly universal because they do not historically change across time, space, and cultures. For Menger, then, propositions that express universal connections among essences are "exact laws." The Mengerian perspective also considers that there are essences in the social world and that scientific social knowledge of them is possible. In particular, economists study the general essences and connections of economic phenomena, including money.

Sharing a similar perspective, Mäki (1990: 289) proposes an interpretation of Mengerian economics as "exemplifying a version of essentialist realism." Mäki also believes that the idea of essence is useful in interpreting the Mengerian theory of money. He reads Menger as distinguishing between the nominal essence and the real essence of money. The nominal essence corresponds to those characteristics that permit a particular piece of matter to be an instance of abstract – "universal" – money. The real essence of money, instead, must be characterized in terms of the invisible hand notion.

We believe that an Aristotelian-essentialist reading of Menger's 1892 work, while not free of controversy, makes sense. In this work, Menger challenges the perspective of money as an institution created by law and convention. He also challenges (1892: 241, 254) Aristotle, Xenophon, Pliny, John Law, Adam Smith and others who believed that the peculiar qualities of precious metals are the reason for their election as a medium of exchange. For Menger, the crucial question is how certain commodities have been "promoted" among all other commodities and accepted as general media of exchange, and his answer points to something "unhistorical," namely, human self-interest. Menger (1892: 242–243) believes that primitive economic humans gradually learned the economic advantages of exchange. At the beginning there was barter, but it was limited by the high number of simultaneous coincidences that had to be satisfied for the exchange to take place. Those difficulties would have been insurmountable obstacles to the growth of production and trade "had there not lain a remedy in the very nature of things," namely, *the different degrees of saleableness (Absatzfähigkeit) of commodities.* Such a remedy is the general phenomenon that includes the existence of money and the special case of "almost unlimited saleableness" (Menger, 1892: 242, original emphasis).

In Menger's theory (1892), a commodity is more or less saleable according to the probability of success of disposing of it for a low price. A smaller difference between the buying and selling prices of an article is associated with higher degrees of *saleableness*. With the expansion of commerce, each individual learns the gains to be made from bartering their less saleable goods for those that are highly saleable. Tradition and habit have converted the most saleable of those commodities into the generally accepted medium of exchange. The reason that precious metals are the medium of exchange in so many places and at so many moments in history is their *saleableness*, which is much higher than that of other commodities (Menger, 1892). However, at the end, Menger ponders whether the differences in the degree of *saleableness* become absolute so that a distinction between money and non-money can be made:

Thus, the effect produced by such goods as are relatively most saleable becoming money is an increasing differentiation between their degree of saleableness and that of all other goods. And this difference in saleableness ceases to be altogether gradual, and must be regarded in a certain aspect as something absolute. The practice of every-day life, as well as jurisprudence, which closely adheres for the most part to the notions prevalent in every-day life, distinguish two categories in the wherewithal of traffic – goods which have become money and goods which have not. (Menger, 1892: 252)

Mengerian theory has left a lasting impact on monetary economics (Álvarez and Bignon, 2013). Notwithstanding the well-known influence of Mengerian ideas, we want to remark that there is a long-

standing view of the way that money must be distinguished from non-money. The following section is devoted to analyzing that view.

3. An appraisal of the money or non-money view

Smit *et al.* (2016) aim to provide a criterion to determine whether bitcoin is or is not money. Although their motivation is practical, the starting point is philosophical. Unlike other philosophical approaches to money in which there is no serious reference to any insight produced by economists, their account is developed in proximity to monetary discussions in economics. We agree with this manner of theorizing whereby economics and philosophy join forces to deliver a comprehensive explanation of the nature of money. We introduce their strategy, which is well summarized in the following passage:

A ... compelling answer to whether bitcoins are money would be to identify some theoretically interesting, explanatory characteristic shared by those things we *uncontroversially* consider to be “money” and to see if bitcoin has the characteristic in question. This, roughly, is the same basic strategy as is used to determine the extension of *natural kind terms*, i.e. to determine whether whales are fish, whether “heavy water” is water, whether “fool’s gold” is gold, and so on ... (Smit *et al.*, 2016: 327, added emphasis)

A major contribution of Smit *et al.*'s (2016) work is that by explicitly rooting their strategy in the idea of natural kinds, they allow us to discuss what would be needed for *the money or non-money view* to succeed. On *the money or non-money view*, there is a set of defining characteristics of money that make money categorically different from other things used in transactions. Because the difference between money and non-money is a matter of kind and not of degree, on this view, it is possible to draw a sharp dividing line between money and non-money. We think that the classificatory ambition of *the money or non-money view* implies adherence to the traditional essentialism of natural kinds. Following traditional essentialism, *the money or non-money view* requires identifying the set of necessary and sufficient characteristics that are the intrinsic properties of things that unambiguously form the natural kind designated by the term money. Thus, the question of whether a thing is or is not money can be regarded as a question about the possession of a natural kind essence. If they possess some natural kind essence, those objects called money can be considered categorically distinct from those called non-money and a sharp dividing line can be drawn.

We do not provide a detailed historical background of this view in economics. However, we believe that if Menger (1892) is an early proponent of *the money or non-money view*, Clower (1967) is a legitimate successor. Clower argues that the process of exchange suggested by Patinkin's monetary theory was indeed descriptive of a barter economy. The traditional budget equation did not preclude trade between any combination of commodities, and consequently, any commodity could be directly used in trade. The solution, for him, requires a clear distinction between money and non-money commodities. In a pure monetary economy, the role of money is ascribed to any commodity that can be directly exchanged for *all* other commodities. Therefore,

The exchange relation of an economy either does or does not assign a special role to certain commodities as money. The distinction between money and other commodities is thus a matter not of degree but of kind. (Clower, 1967: 5)

Friedman and Schwartz (1970) noted shortly after Clower that one approach to constructing monetary statistics sought to form a group of assets called “money” based on a theoretical principle. For economists such as Newlyn (1964), Gramley and Chase (1965), Pesek and Saving (1967), and Yeager (1968), assets that belong to the group “money” must possess the same feature that, according to the theoretical principle, is distinctive of money. For example, some of these economists agree that the term money should be restricted to currency plus demand deposits, as these are the only assets

that have the feature of being a medium of exchange. Adherents of this approach have full membership in *the money or non-money view*. Commenting on this approach, Yeager (1968: 66–67) writes:

Whether or not a thing serves as a general medium of exchange might even seem a mere matter of degree[.] ... At some point, apparently, the shading or drift from the properties of close near-moneys toward those of money becomes a jump from a difference in degree to a difference in kind. ... [T]his really may be the way things are with money.²

In the next subsection, we challenge *the money or non-money view*, arguing that the traditional essentialism of natural kinds does not apply in the case of money. Thus, the aim of categorically separating money from non-money could never be successfully reached.

Reconsidering the idea of a kind essence of money

Essentialism of natural kinds has recently been subjected to heavy criticism in the philosophy of science, and its research agenda is now singled out as having taken a “deflationary turn” (Tahko, 2015: 795). Some critics argue that the existence of essences upheld by essentialist interpretations of natural kinds is merely a gratuitous assumption. Others go to the empirical sciences in search of cases revealing essentialism’s limited capacity to capture the actual kinds found by special sciences. Predominantly, essentialists have been criticized for interpreting natural kinds as immutable or static, while the natural sciences embrace mutable and dynamic kinds (Bird and Tobin, 2018).

In the version of traditional essentialism discussed in this paper, the natural kind essence of an object is the set of intrinsic properties that the object must possess if it is to be a member of the kind (Ellis [2002] 2014: 26–27). A wide body of literature discusses what an “intrinsic property” is without reaching a consensus. However, among the different alternatives, possibly the most popular use of the term *intrinsic* is that which expresses a notion of interiority – such as the number of protons inside the nucleus of chemical elements.³ Using this restrictive interpretation, Ellis ([2002] 2014: 33) claims that chemical elements are genuine natural kinds; therefore, “there is never a gradual transition from any one chemical kind to any other chemical kind.” Since the distinctions between chemical kinds “are based entirely on intrinsic (interior) differences,” Ellis also holds that they are “nature’s distinctions, not ours.” However, can this perspective be extended to a social phenomenon such as money? To answer this question, we survey what monetary economists have learned about the nature of money and use that knowledge to decide whether there is a set of intrinsic (interior) properties that form the kind essence of money. Furthermore, we discuss whether there is a set of necessary and sufficient characteristics for membership in the kind “money,” regardless of whether they are interior or exterior.

The term *money* often refers to *objects* that, as coins or bills, are used for transactional purposes. However, money can also refer to an *institutional transaction mechanism* that we use to exploit the gains from trade. Other paradigmatic instances of institutional transaction mechanisms are credit and barter. In the contemporary economy, as opposed to a pure monetary economy, various

²Another approach to constructing monetary statistics, which is followed by Friedman and Schwartz (1970), claims that due to the lack of a precise definition of money, a dividing line must be chosen according to the ability to deliver the best predictions of observable phenomena. As this approach distinguishes between money and non-money, but not by means of an allegedly defining feature of money, it does not fall within what we call *the money or non-money view*.

³For a fairly complete discussion, see Marshall and Weatherson (2018). For them, being cubical is intuitively an identity interiority property and being an uncle is not intuitively an identity interiority property. More formally: “Being FF is intrinsic iff, necessarily, for any xx, if xx is FF then xx is FF in virtue of how xx is intrinsically, where ‘how xx is intrinsically’ abbreviates ‘how xx and its parts are and how they are related to each other, as opposed to how xx and its parts are related to other things and how other things are’” (Marshall and Weatherson, 2018).

institutional transaction mechanisms coexist.⁴ Rocheteau and Nosal (2017) hold that a key distinction between monetary and credit trade is that with money the exchange is *quid pro quo* and no future obligation is involved. However, credit trades are intertemporal, which implies a delayed settlement. In practice, both mechanisms interweave, e.g. cash plays a significant role as an instrument to settle debt, while credit cards are largely used to pay for purchases. Thus, as many economists think, a term such as *means of payment*, meaning that an object can be used to pay for purchases and settle debts, is more appropriate than a term such as *medium of exchange*.⁵

Among standard monetary models, we concentrate on models in which the use of a means of payment is an outcome rather than a presupposition.⁶ Note that models without money, or in which the use of money is forced by the modeler (e.g. money-in-the-utility function or cash-in-advance models), can hardly provide us with information about a potential essence of money. One insight that emerges from models in which money is an outcome is that the exchange value of money is pinned down by two key factors: (1) the fundamentals of objects and (2) beliefs about their acceptability in trade. Consider, for instance, an environment without fiat money but instead with various objects that differ in their storage costs. If individuals are guided only by fundamentals, the object with the lowest storage cost will be accepted as a means of payment. However, theory also predicts that agents can end up in a speculative equilibrium in which the good with the highest storage cost circulates as a means of payment. This can happen as long as the object is believed to be widely accepted. Such a prediction, already tested in the laboratory (Duffy, 2001; Duffy and Ochs, 1999, 2002), weakens the claim that the acceptability of a means of payment relies exclusively on fundamentals. Accordingly, the acceptability of a means of payment in trade can be driven primarily by self-fulfilling beliefs.

Monetary economists sometimes use the term fundamentals to refer to explicitly physical characteristics that explain the fundamental value of an object. Nevertheless, we think that the term “fundamentals” also names factors that exceed the interior properties of objects used as money. Thus, for instance, although storage costs entail a physical dimension (e.g. size and durability), they can vary substantially as a result of a transformation in the available storage technology while leaving objects’ physical characteristics unchanged. Additionally, the present value of future payoffs can, to some extent, be determined by the physical characteristics of assets. However, these payoffs are also largely determined by aspects that can be considered *exterior*, such as individual preferences, interest rate, or asset volatility. Fundamentals thus do not qualify as an *interior* property of money.

For an object to circulate in trade as a means of payment, individuals must hold beliefs about its acceptability. Thus, the institutional object called “money” consists of both the physical elements of the physical object and individuals’ beliefs that such an object will be accepted in trade. In such a way, while not part of the physical object, beliefs about acceptability are a property of the institutional object “money.” However, are these beliefs an intrinsic property? We think that, rather than an interior property, beliefs about acceptability imply a complex network of exterior relations of money holders with other institutions and social conventions that decisively defines the acceptance of a means of payment. That political and cultural as well as institutional and historical factors shape beliefs about the

⁴Credit has historically played an important role in the development of monetary exchange (Graeber, 2011; Semenova, 2011). Indeed, modern monetary economists are aware that the double-coincidence problem is not sufficient for finding a role for money. Only when agents cannot commit to repaying their debts or have no monitoring technology to push deviants can credit not be implemented and money becomes an essential alternative (Lagos *et al.*, 2017).

⁵Most modern monetary economists seem to agree that the primary function of money is to be a medium of exchange (Clower, 1967; Wallace, 2008). Samuelson’s (1958) overlapping generations model explains money as a store of value. As Hoover (1996: 212) says, the unit of account is “traditionally regarded as the weak sister of the famous triad.” Marx’s ([1867] 1906) notion of general equivalent is reminiscent of the role of money as a unit of account. More recently, Doepke and Schneider (2017) wrote a model of money as a unit of account.

⁶For money as an outcome, see Kiyotaki and Wright (1989, 1991), who explored settings in which agents meet bilaterally at random and found an equilibrium where an object is used a means of payment. Shi (1995) and Trejos and Wright (1995) relaxed the assumption of indivisible goods and let agents bargain on terms of trade. More recently, Lagos and Wright (2005) built a tractable model of divisible money. This literature is surveyed in Lagos *et al.* (2017), Rocheteau and Nosal (2017), and Williamson and Wright (2010a).

acceptability of a means of payment is not alien to monetary economists. As Kiyotaki and Wright (1992: 19) observe, “acceptability may not actually be a property of an object as much as it is a property of social convention.” Just like fundamentals, beliefs about acceptability are not an interior property of the institution of money.

Interior properties play a role in explaining the use of an object as a means of payment. However, membership in the kind “money” is largely defined by exterior relations of objects and individuals with the determinants of fundamentals and beliefs about acceptability. The fundamental value of gold is not only determined by its chemical qualities but also reflects the exterior relations between the interior properties of gold and the prevalent desires and cultural practices of our society (Smit *et al.*, 2011). The launching of a new currency is an example of the complexity of exterior relations that shape beliefs about the acceptability of money (Lotz and Rocheteau, 2002; Selgin, 1994). Despite the sophisticated institutional design implemented by the Eurozone, which is in itself evidence of this complexity, it has also been reported that bank customers screen the serial numbers of notes to determine the origin of issue. Such customers prefer to hold notes having a serial number beginning with X, namely, notes printed for the German Bundesbank (Evans-Pritchard, 2008). Fundamentals and beliefs are thus not independent of the histories, locations, and particular social context in which a determined object is used as a means of payment.

The properties studied above are not interior properties; thus, one important requirement of traditional essentialism is not met. However, another question remains: Can we identify a list of necessary and sufficient characteristics, whether interior or exterior, for membership in the kind “money”? Although we have remarked that the positive exchange value of money depends on fundamentals and beliefs, we do not regard them as the set of necessary and sufficient characteristics that allow one to categorically separate money from non-money. A simple comparison between commodity money and the fiat money system confirms this. While the value of cigarette money is backed by its properties as a commodity (Burdett *et al.*, 2001), the same does not hold true for, say, dollars, or any other form of contemporary national currency whose discounted stream of dividends (or fundamental value) is zero. Furthermore, there are assets that, even though their fundamental value is positive, are never used as a means of payment but rather as a store of value.

Another alternative could be to interpret the function of means of payment as the necessary and sufficient condition for membership in the kind. We think that such a functional kind is a viable alternative. However, a crucial difference from traditional essentialism is that even in that case, there will always be some vagueness in the kind. Recall that the function of means of payment can be performed with credit; also, as we will show in section 4, the function of means of payment is a matter of degree and not of kind. Therefore, the goal of a clear-cut distinction between money and non-money cannot be achieved. In the rest of the paper, we will not embark on the task, which we think is doomed to fail, of checking a list with all the necessary and sufficient characteristics that have ever been proposed to clearly separate money from non-money. We are unaware of the existence of such a list and are skeptical about the possibility not only of producing it but also of using it to unambiguously demarcate the extension of the natural kind “money.” If we followed that path, we would arrive at the start of the paper and the question about the defining characteristic of money to establish, for example, whether bitcoin is or is not money.

Some additional consequences and alternatives

Because of the difficulties in finding the natural essence of money, it is not surprising that the measurement of money is not free of arbitrary classificatory practices. Whereas every central bank in the world agrees on the inclusion of official currency in the measure of monetary aggregates, there are many other financial instruments for which the inclusion decision is not plain. Despite global efforts to standardize measurement practices, it is explicitly acknowledged that the final decision depends on the circumstances of each nation (International Monetary Fund, 2016). This inevitably leads to discrepancies between countries over what is considered money. The Bank of England (BE) adopts an

institutional definition of the money-creating sector that excludes units or shares issued by money market funds from broad monetary aggregates. For its part, the European Central Bank (ECB) includes the products of money market funds in its statistics, as the ECB's definition of money follows a *functional* criterion (Burgess and Janssen, 2007). We thus find that the same financial instrument both is and is not money, depending on the money-creating sector definition that is adopted. In the same vein, central banks disagree about the maturity cut-off point of financial instruments. The idea is that long-term instruments should not be termed as broad money because they are mainly used for saving rather than for transactional purposes. However, how long does the short term last? The honest answer is that no one knows exactly. The BE employs a maturity cut-off of up to five years, the ECB up to three years, and the Federal Reserve has no maturity cut-off.

We have argued that, based on what is known from modern monetary economics, we cannot identify a set of interior properties that form the natural kind essence of money. We have also pointed out that it has not been possible to identify a set of necessary and sufficient characteristics, whether exterior or interior, for membership in the kind "money." A corollary is that economists cannot define the kind membership independently of exterior relations and arbitrary classificatory practices. There is nothing in the nature of money that can be interpreted as a natural kind essence that one could use to sharply separate money from non-money, as idealized by *the money or non-money view*. We conclude then that while the version of essentialism evaluated here could apply to chemical elements, it does not apply to the institution of money. This conclusion may be palatable even to contemporary supporters of traditional essentialism who can readily admit that essentialism is restricted to the natural kinds of chemistry and particle physics (Ellis, [2002] 2014). Our main point, however, is not aimed at philosophers who are already persuaded of the limits of traditional essentialism. Rather, we aim to show that economists of *the money or non-money view* do not seem to be aware of what, from a general perspective, would be required to implement an unambiguous classification of things into money and non-money. Without what is called a natural kind essence of money, the classificatory purpose of *the money or non-money view* cannot be successful.

There is an alternative approach to analyzing high-level systems as biological organisms or social systems that seems to be more promising than traditional essentialism. The alternative is Richard Boyd's (1999) homeostatic property cluster (HPC) theory of natural kinds. In this theory, the different properties of a natural kind are highly correlated so that they form a cluster of properties. The presence of a property in the cluster makes the presence of another property highly probable. Remarkably, Boyd's HPC theory does not require us to assume, as traditional essentialism does, that there is a natural kind essence that is an intrinsic property of all of a kind's members – as in the case of the atomic structure of an element or the DNA of a biological species. HPC theory thus permits exterior relations to play a noteworthy role in inducing similarity among the members of a kind. In the case of species, both the interior properties and exterior relations of organisms are significant causes of species-wide similarities (Ereshefsky, 2017).

Boyd's theory is able to accommodate the idea that money is both the result of the interior properties of objects that serve as instances of this institution, and the exterior relations of objects and individuals with the factors that determine fundamentals and beliefs about acceptability. Guala (2016a, 2016b) employed Boyd's theory to assert that money is a natural kind that is grouped according to its functional properties. For Guala (2016a), the three standard functions of money are correlated, as they solve a cluster of related problems. Interestingly, this interpretation of money is in line with our claim that there is no kind essence of money that allows us to categorically separate money from non-money. Boyd's theory admits a certain degree of vagueness and conventionality in drawing the boundaries of natural kinds because some individuals cannot possess one or more properties of the cluster.

The role given to money in economics has been a particularly disputed issue in the discipline (Hoover, 1996). Historians of economics have even suggested that the opposition between "real" and "monetary" analysis could be a foundational divide in economics (Cartelier, 1985: 64; Schumpeter, 1954: 276). The disputability of money could then give the impression that our

conclusions depend substantially on the type of monetary theory that we used to criticize the traditional essentialism endorsed by *the money or non-money view*. Beyond the reasons one could have for preferring one theory or another, we believe that our argument is sufficiently robust to hold true even when another respectable theory of money is used. Although we do not discuss the heterodox monetary approach in detail, we do not think that it is supportive of a traditional essentialist interpretation of money. We simply remark that this approach has, for a long time, explicitly insisted upon the historical part played by the state in the implementation of a means of payment (Knapp, 1924; Smithin, 2000; Wray, 2014). Additionally, within this approach, Ingham (2004) has claimed that money is a social relation that involves a promise between the issuer and the user of money. Since these characteristics can hardly be regarded as intrinsic properties that are necessary and sufficient for a thing to be money, our sense is that our point against *the money or non-money view* is secure.

4. The liquidity degree view: an outline

In opposition to *the money or non-money view*, we introduce what we call *the liquidity degree view*. As the multiple objects that circulate as means of payment differ in their degree of acceptability, *the liquidity degree view*, instead of proposing an absolute standard of liquidity, emphasizes that there is a scale of liquidity. It should be noted that economists belonging to the *liquidity degree view* are not the only ones claiming that objects used to facilitate transactions have different degrees of liquidity. After all, Menger (1892) spoke of different degrees of *saleableness*, and Yeager (1968) mentioned differences in degree among distinct media of exchange. However, as mentioned above, they believed that such differences ceased to be gradual to become merely a difference in kind. Therefore, what actually sets apart *the liquidity degree view* is that it does not hold that a difference in liquidity degree transforms into a difference in kind. Accordingly, *the liquidity degree view* does not postulate any theoretical principle or absolute standard of liquidity based on which one could categorically determine that one group of objects must be called money while the other must be called non-money. In this section, we do not make a comprehensive presentation of *the liquidity degree view*. Instead, we just aim to outline some of its features and implications.

To introduce the idea of a liquidity value, we build again on the same type of monetary economics we have used until this point.⁷ As shown above, the value of an object serving as a means of payment is not just pinned down by its fundamental value. To the extent that an object is accepted in trade because people believe in its acceptability, the object is also valued for its usefulness in facilitating the exchange. This usefulness can be interpreted as the *liquidity* value of a means of payment. Returning to the example of a dollar bill, although no dividend is paid, it is positively priced due to its widespread acceptability that makes trade much easier. However, if the price of the simplest of assets is so determined, it means that the liquidity considerations might matter for the pricing of other assets that are also used as means of payment. Consider a case in which fiat money is perfectly recognizable, while for the other assets, agents cannot differentiate between authentic and fraudulent assets. If the cost of counterfeiting were low enough, a large number of phony assets could be produced and agents would prefer not to accept any asset in trade. Assets become fully illiquid, and their price only reflects the fundamental value. In contrast, if no phony asset were produced, assets would circulate alongside fiat money, and their prices would exceed the fundamental value, thereby reflecting a liquidity premium (Lagos *et al.*, 2017; Rocheteau and Nosal, 2017).⁸

⁷For an alternative presentation of liquidity, see Foley (1987), Minsky ([1986] 2008), and Bell (2001). This literature introduces the idea of different degrees of acceptability postulating the existence of a hierarchy of liabilities. Bell (2001) conceives of the hierarchy as a four-tiered pyramid, where in each tier there is a sector of the economy depending on the degree of acceptability of its liabilities.

⁸The idea that the rates of return may depend on liquidity value has been used by modern monetary economists to explore the problem of the coexistence of fiat money with interest-bearing assets. This is an old problem remarked upon by Hicks (1935) and frequently ignored by the Walrasian tradition of money.

Liquidity is valued according to the degree to which an object is accepted for transactional purposes. In an extreme case, the liquidity of an object could be practically nil, as was the case of Hungarian banknotes under hyperinflation in 1946. In another extreme case, one could imagine a banknote issued by the Central Bank of the Earth, which is valid as a means of payment in the global economy, that is, an object having an extremely high liquidity. Between these two extreme cases, what we observe in actual economies is the coexistence of many and various objects that circulate as means of payment, although they have different levels of acceptability. As Keynes ([1936] 1949: 239–240) put it, liquidity is “a matter of degree,” so that “there is, clearly, no absolute standard of ‘liquidity’ but merely a scale of liquidity.” Similarly, Friedman and Schwartz (1970) maintain that assets may provide the joint products of moneyness and interest-payingness. In Friedman and Schwartz’s terminology, moneyness refers to the capacity of an asset to serve as a medium of exchange. They opine that it is possible to regard “each asset as a joint product having different degrees of ‘moneyness’” (Friedman and Schwartz, 1970: 151).⁹

Banknotes, treasury bills, mortgage-backed securities, mutual fund shares, shells, stones, cattle, and cigarettes are all examples of objects that have or have had some positive rating on the scale of liquidity. For the reasons already presented, therefore, the level of liquidity is not given *a priori*, but it is rather the result of the exterior relations of objects and individuals in a particular social context that shape the preferences of acceptability in transactions of a given object. On this subject, Keynes ([1936] 1949: 240) claims that “the conception of what contributes to ‘liquidity’ is a partly vague one, changing from time to time and depending on social practices and institutions.” The position of an object, new or already existing, on the liquidity scale is to be modified based on whether certain factors that are relevant to determining its acceptability in payments are changed.

The liquidity degree view does not hold that there is a critical threshold of acceptability with which one can categorically separate money from non-money. Since acceptability remains a matter of degree and not of kind, liquidity cannot be used to sharply demarcate the borders of a natural kind designated by the term money. The Committee on the Working of the Monetary System in the United Kingdom was set up in 1957 under Lord Radcliffe to make recommendations on the working of the monetary and credit system. Its report known as the Radcliffe Report and published in 1959 claimed that the objective of monetary policy was not to control or influence the money supply, narrowly defined, but the overall liquidity position of the economy (Radcliffe Committee, 1959). According to Cramp (1962: 5, 14), the Radcliffe Report “conceives of a wide range of assets capable of performing in varying degree the essential monetary functions,” and he also added that “the Radcliffe case rests on the impossibility of finding a clear-cut line of division between monetary and nonmonetary assets.” Likewise, Richard Sayers (1960: 716), a member of the Committee, wrote that “there is no single asset or group of assets that uniquely possesses a uniform monetary quality that is totally absent from all other assets.” While the Radcliffe Report is an explicit instance of what we call *the liquidity degree view*, the theoretical influences of the Report seem to stretch back to the Banking School (Sayers, 1960). In showing the parallel between the debates that the Radcliffe Committee was involved in and those of the Currency and Banking Schools, Cramp (1962: 11) pointed out that,

On the one hand, we have the Currency/orthodox conception of a clear line of demarcation between money and near-money, with the latter in an important sense dependent on the former. Against this is the Banking/Radcliffe view that any demarcation line is arbitrary, with the emphasis on the wide degree of substitutability across the whole liquidity spectrum.

We do not wade into the controversy between the Currency and Banking Schools. Although the above quote suggests that they are early exponents of *the money or non-money* and *liquidity degree views*, careful historical work will be required before coming to a solid conclusion. In the blogosphere,

⁹Since moneyness is consistent with the modern notion of liquidity, contemporary monetary economists often use the term moneyness as an alternative formulation of liquidity value.

J. P. Koning (2013) has rescued Hayek's view on the divide between money and non-money, which is particularly enlightening. As Hayek ([1976] 1990: 56) explains,

Although we usually assume there is a sharp line of distinction between what is money and what is not – and the law generally tries to make such a distinction – so far as the causal effects of monetary events are concerned, there is no such clear difference. What we find is rather a continuum in which objects of various degrees of liquidity, or with values which can fluctuate independently of each other, shade into each other in the degree to which they function as money.

I have always found it useful to explain to students that it has been rather a misfortune that we describe money by a noun, and that it would be more helpful for the explanation of monetary phenomena if “money” were an adjective describing a property which different things could possess to varying *degrees*.

The refusal to draw a sharply defined line between money and non-money also seems to be shared by contemporary monetary economists. Williamson and Wright (2010b: 294), within the context of a theoretical model in which third-part liabilities facilitate transactions, concluded that “we see no real purpose in drawing some boundary between one set of assets and another, and calling members of one set money.” Likewise, in a post-Keynesian analysis of the shadow banking system, Nersisyan and Dantas (2017: 285) claimed that they “refer to the liabilities denominated in the money of account by their specific names – coin, currency, deposits, commercial paper, Eurodollars, etc., without carving out a subset of liabilities and calling it ‘money.’”

While economists belonging to *the liquidity degree view* agree that a clear-cut distinction between money and non-money is not possible, they strongly disagree on many theoretical and policy issues. The fact that they are grouped into a single view does not intend to downplay the diversity and richness of their analysis. Indeed, it could be the case that a detailed historical research that elaborates on their disagreements finds a classification more fine-grained than the dualistic framework proposed in this paper. However, we believe that if one takes the insights of these economists seriously, one result is that the essentialist impulse to categorically separate money from non-money must be resisted.

With respect to the practice of speaking about money as a noun, we recall that a work of science helps us debug folk practices that provide us with an incorrect image of the world.¹⁰ Is bitcoin money? Using their strategy, which was mentioned in section 3, Smit *et al.* (2016: 333, emphasis added) conclude that “it is reasonably clear that the answer is *no*.” Nonetheless, they also mention that “we could say that bitcoin may become money at some point, and we could say that bitcoin is *already* money among those who use it to transact.” For them, then, bitcoin is money and non-money at the same time. The analytical shift proposed here in favor of *the liquidity degree view* yields an immediate payoff. Once we do not derive from bitcoin's low liquidity degree the statement that bitcoin is not money, it spares us making the contradictory claim *à la* Smit *et al.* (2016) that even though bitcoin is not money, it is money for those who use it in transactions. At the moment, bitcoin is not used as a production input, nor is it directly consumed, namely, its fundamental value is zero. However, as discussed above, assets can be positively valued based on the beliefs or expectations of market participants. Bitcoin's present price “is determined solely by expectations about its future price. A buyer is willing to buy a bitcoin unit only if he or she assumes that the unit will sell for at least the same price later on” (Berentsen and Schär, 2018: 7). Although bitcoin has been promoted as a substitute for

¹⁰At the suggestion of a reviewer regarding this point, we refer to Ladyman and Ross's (2007) book; they develop a hard criticism of the philosophical reflection that relies exclusively on old-fashioned science, common sense, and day-to-day intuitions. Regarding the nature of money, we believe that to a certain extent there has been an undesirable combination of the view criticized by Ladyman and Ross and a deficient philosophy practiced by celebrated economists, such as those of *the money or non-money view*. Certainly, an equilibrium between the better of the two worlds is what seems preferable.

traditional currency, the available evidence reveals that so far, it has performed poorly as a means of payment. Seen through the lens of *the liquidity degree view*, we believe that the question about whether bitcoin is or is not money should be abandoned. Bitcoin can be described as a means of payment with a poor degree of acceptability.¹¹

The implications derived from *the liquidity degree view* are non-negligible. Among other things, the very notion of what can be called money is questioned, as is the attempt to draw an indisputable dividing line between money and non-money. *The liquidity degree view* agrees with Boyd's HPC theory that there is some vagueness when establishing the boundaries of natural kinds. However, while on Boyd's theory, this vagueness results from the lack of possession of one or more properties by some individuals, on *the liquidity degree view*, the vagueness arises because money is an institution characterized by the possession of the property of *liquidity* that comes in degrees. Whether the possession in degrees of any type of property or set of properties is an idea that can be generalizable to other institutions is something still to be determined. However, this could be a case where the methodological problems of economics provide us with a heuristic to think about larger issues within the philosophy of social sciences.

Does *the liquidity degree view* imply that economists cannot call a group of means of payment, for lack of a better word, money? No. Following in the footsteps of Friedman and Schwartz (1970: 137), we think that an alternative is the creation of arbitrary dividing lines that are established as a matter of convenience depending on the purpose of their use: testing a hypothesis, building a simplified model, predicting a phenomenon, designing a policy, or regulating an activity. In each case, the motivating purpose arises from the particular needs of the people in charge of studying and managing monetary issues.¹²

As our theories of money develop further, so too will our classifications of money. The pioneering work of Friedman and his students (1956), subsequent works such as the one by Friedman and Schwartz (1970), and the development of a typology of M0, M1, and M2 represent great achievements in the effort to produce better monetary statistics. Today, it is a widespread practice to measure money through simple sum monetary aggregates in which each asset is treated as a perfect substitute for all other assets. Although Friedman and Schwartz (1970) used this type of aggregation, they cautioned that a more sophisticated method implied a weighted sum of assets, that is, an aggregation in which the different components are added up with weights reflecting the different degrees of money-ness. Divisia monetary aggregates represent an alternative to simple sum monetary aggregates (Barnett, 1980, 1982). Interestingly, empirical exercises that use Divisia aggregates find results that contradict the current unanimity that monetary aggregates are not helpful for monetary policy and business cycle analysis (Hendrickson, 2014). *The liquidity degree view* can bring new insights by revisiting the discussion, often overlooked, of simple sum monetary aggregates and weighted monetary aggregates.

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¹¹The total number of bitcoin transactions in 2017 amounted to less than one-tenth of 1% of the total electronic commerce transactions (Fox, 2017). In addition, according to information reported by the 17 largest crypto merchant-processing services, the use of bitcoin to buy and sell goods and services continues to fall (Kharif, 2018). For a discussion of possible alternative uses for bitcoin, see Andolfatto (2016), Koning (2018), and Williamson (2018).

¹²Keynes ([1936] 1949: 167) seems to agree with this position: "We can draw the line between 'money' and 'debts' at whatever point is most convenient for handling a particular problem."

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