

On the economic importance of ownership and security: claims to property as a foundation of monetary systems¹

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Abstract

This article examines the role of ownership and security in the context of monetary systems. It expands previous ownership-based money approaches and for the first time fully integrates commodities, private debt, bank instruments (private and central) and state-issued means of payment into an ownership theory of money. It is argued that this new synthesis reveals a more general economic principle. In ownership-based societies, individuals enter into economic dealings by issuing enforceable claims to their property on the basis of ownership and security, while at the same time retaining possession or control of their assets. In its essence, the monetary role of commodities, state-issued coins and state debt instruments is to perform the function of settlement assets in this system.

Classification: E31, E32, E40, E42, E50, E51, K11, N10, O10, P14

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In the example before us, we may suppose that (A) having no more circulating equivalent to give (B) for his work, and being desirous to consume of it to the value of his land, shall agree to issue notes of hand [...] Here then is the effect of credit or symbolical money. Now I ask, whether the notes of hand given by (A) to (B), do not contain as real a value, as if he had given gold or silver? [...] Nothing is so easy as to invent a money which may make land circulate as well as houses [...].

James Steuart (1767)

[the] effects of an integrated property process mean that Westerns' houses no longer merely keep the rain and cold out [...] these houses can now lead a parallel life, doing *economic* things they could not have done before.

Hernando de Soto (2000)

Commercial dealings in any modern monetary economy with a civil or common law system involve property (things that can be owned) and property rights such as ownership, possession and security. While possession governs the use and control of an object, ownership can be understood as the ultimate residual right left with the owner after other property rights, such as possession, have been granted to others (Goode, 2004: 31). Security on the other hand can provide a creditor with rights against the property of a debtor, while allowing the debtor to stay in control of the assets that secure the loan. This conceptual separation of ownership, possession and security and the protection and enforcement of property rights through commercial and property law provide the legal basis of any credit-based monetary economy enabling loans, credit sales, leases and mortgages.

While the critical role of ownership and security in commercial dealings is self evident, their role in the origin and nature of money itself has only been recently recognised and placed in a coherent theoretical framework ('ownership economics', Heinsohn and Steiger, 2002 [1996], 2013; Stadermann, 2002, 2006; Decker, 2015a, 2015b; see also de Soto, 2000). Ownership economics argues that in all well-functioning monetary systems both past and present, genuine money (below referred to as 'creditor's money') has been represented by a documented claim to property that is created when a creditor, such as a bank (private or central), issues notes to a debtor (for example, a producer) as part of granting a secured loan (Heinsohn and Steiger, 2013: 3). This has enabled to establish in a 'rigorous fashion the essence of money [...] as being completely distinct from any kind of material good' (Graziani, 2008: 69-70) and provided the long awaited explanation of interest.²

This legal perspective has provided a much needed alternative to the prevailing commodity (Smith, 1776 and Menger, 1871) and state theories of money (Knapp 1924 [1905]), which have remained unsatisfactory from a theoretical perspective. First, it has long been argued that the essence of money is of an abstract and not a 'material' nature (Knapp, 1923:2; Riese, 1995: 47; Laum, 1924: 159-160). For example, full-bodied coins can trade with an *agio* above their intrinsic metallic value (Stadermann and Steiger, 1992) and the scarcity of commodity money can be undermined by its increased production. By contrast, 'money' created by a note-issuing bank in discount, repurchase or credit operations can always be kept scarce. Second, concepts of 'state money' as government liability reflected in concepts such as 'outside money' (Gurley and Shaw, 1960: 72-73) and the 'taxes drive money view' (Wray, 1998) are equally problematic. While frequently encountered throughout history, such arrangements are often associated with totalitarianism, war mobilisation, financial crises or hyperinflations. Consequently, it has been argued that a theoretical approach based on state money only inadequately reflects the actual operations observed in well-functioning monetary systems, where central banks create money via commercial banks based on sound loan security for private entities with minimal interference from the state (Heinsohn and Steiger, 2013: 36-39).

However, if money is to be viewed as a claim over creditor property created in secured creditor-debtor contracts, typically by banks, how is the role of commodities, coinage, state debt instruments and private debt instruments to be understood? It is clear these have played a special role in monetary systems and unlike other assets were considered as 'money' or assigned 'money' attributes (Smith 1776; Menger, 1871; Knapp, 1923 [1905], Mitchell Innes, 1913).

The purpose of this paper is to extend Heinsohn and Steiger's approach by integrating commodities, private debt, bank instruments (private and central) and state-issued means of payment into an ownership-based theory of money. It is argued that this new synthesis reveals a more general economic principle: in ownership-based societies, individuals enter into economic dealings by issuing enforceable claims to their property on the basis of ownership and security, while at the same time retaining possession or control of their assets. By contrast, commodities, coins and state debt instruments, in their essence, perform the function of 'settlement assets' in this system.

² See Heinsohn and Steiger (2013) for a detailed discussion of the various theories of money and interest.

This paper is organised as follows: Section 1 provides an outline of Heinsohn and Steiger's central concept of 'creditor's money'. Section 2 introduces the concept of 'claims to property' and reviews the historical evidence of how claims were deployed, quantified and settled in ancient, early modern, colonial and modern economies. Section 3 draws the different elements together, arguing that money of account, claims to property (with creditor's money as a special case) and settlement assets appear as central monetary categories. The main archetypes of monetary arrangements found in ownership-based systems are then analysed and discussed.

1. Creditor's money

Central to Heinsohn and Steiger's theory is the view that money emerged as 'creditor's money' and is the consequence of the establishment of societies based on private ownership (as distinct from possession). The taking and the dividing of land is the constituting step in establishing this system and an act that also constitutes the state (Schmitt, 1950:15; Heinsohn, 1984:70; Stadermann, 2006: 65). The Greek *polis* and the Roman *civitas* are regarded as the prototypes (Pipes, 1999: 97-105) together with other examples from the Mediterranean and ancient Near East.

Heinsohn and Steiger argued that once the customary rules governing re-production and distribution in command systems and tribal communities are overturned by the new system, individuals enter into economic dealings through creditor-debtor contracts on the basis of their land ownership (Heinsohn and Steiger, 2013: 57-58). Such credit is no longer based on the rules of reciprocity like those between helping friends or neighbours³ (Heinsohn and Steiger, 2013: 57) but is legally enforceable.⁴ Commodity credits in kind quickly transitioned to a system where creditors issued money notes:

'Very quickly the creditor learns to work with two different documents. He does not lend barley by weight, but instead a document no. 1 (money), a claim against his land allotment that places a burden on his land (ownership), which he continues to use (possession), i.e. by sowing and harvesting. He records this procedure in document no. 2 (credit contract), in which the debtor, the loan security, the amount of credit and the interest are recorded' (Heinsohn and Steiger, 2013: 58).

Moreover, the origin of the institution of ownership itself is tied to the granting of secured credit as in 'the process of hypothecating the debtor's allotment of land, both debtor and creditor, in turn, comprehend ownership' (Heinsohn and Steiger, 2013: 58). Ownership, therefore, emerges as the underlying foundation of (creditor's) money, which in Heinsohn and Steiger's view also explains the

³ Hesiod (*Works and Days*, 371-375) refers to a lack of trust even in dealings among siblings; see Heinsohn and Steiger (2002: 173-174).

⁴ The private origin of loan contracts was also argued by Bogaert based on evidence from Northern Mesopotamia: 'Loans regulated by contract drawn up before witnesses and guaranteed by personal sureties or goods as security were not an invention of the priests or administrators of temples, but of private individuals' Bogaert (1994:15-16).

observed absence of money, markets and genuine economic activity in possession-based systems such as tribal communities, feudal seigneuries and socialist command systems (Heinsohn and Steiger, 2013: 13-14).

In this view 'private property owners – not yet acting as bankers – began to create money-like instruments in collateralised credit contracts with interests' (Heinsohn and Steiger, 2013: 74). Metal rings, plates, spits, nails, miniature axes, sickles etc. are possible candidates for this emerging creditor's money pre-dating coinage (Heinsohn and Steiger, 2002: 280; 2013: 75). These objects were symbolic representations of the pasture and grain fields of their issuers and 'were redeemable in their property' (Heinsohn and Steiger, 2013: 75). In order to limit forgery (Heinsohn and Steiger, 2002: 282) and to increase the acceptability outside the *polis*, these symbolical representations of land property were later replaced by privately issued coins made from precious metal (Heinsohn and Steiger, 2002: 282, 2013: 76). A coin represented 'a coined "money note" [that] made the collateral directly available' (Heinsohn and Steiger, 2013: 76). The authors conclude that 'bank-"notes" were for a long time made from metal' (Heinsohn and Steiger, 2002: 284). This included silver specified in Old-Babylonian loan contracts, which Heinsohn and Steiger interpreted as metal pieces representing land property, and in the Old-Babylonian Sippar took the form of roundlings and Shamash heads (Heinsohn and Steiger 2002: 258, 2013: 76). It was only later that coinage came under state control, which changed their nature from a creditor claim into a state-issued debt.

The same principles are applied in early modern and modern times. Already 'Steuart (1767) knew that the first note-issuing banks in early modern times were created as associations of strong property owners' ('men of property') and Bagehot (1873, 83) had recognised that 'debtors require "property they wish to pledge"' (Heinsohn and Steiger, 2013: 79). Bank notes were (creditor's) money and

[it] is the hypothecated property of the public, which has received bank notes qua credit, that secures this credit, as a supplement to the own capital of the note issuer, and in this way enhances the notes' acceptability with the public and secures the circulation of the notes. In the case of debtor default, notes remain in circulation. If the assets taken as loan security are not of the best quality, the note-issuing bank will need to service requests to redeem these notes out of its own capital. [...] a note-issuing bank is always liable for its notes with its property – its own capital in the broadest sense including profits' (Heinsohn and Steiger 2013: 81).

The property of banks included land property and also precious metal against which bank notes had to be redeemed on demand. Heinsohn and Steiger (2002: 286) argued with Staderman that banks fixed the price of metal in their own notes. For instance, in the 19th century, banks all over the world set the price of gold in their currency units by purchasing and selling gold and commercial bills (Stadermann, 2002: 23; 2006: 63). While prices of goods and commodities fluctuated, this was not the case for gold. The statutes of the Bank of England required the bank to issue a one pound note to anyone who delivered 7.32239 grams of gold. Only this requirement stabilised the price of gold (Stadermann, 1994a: 174). The operation of this system made gold coins equivalent to bank-notes,

and demonstrated once again that ‘a coin made from precious metal [...] was never something else than a bank-note printed on precious metal rather than paper’ (Heinsohn and Steiger, 2002: 287)⁵.

Also the monetary standard (money of account) and nominal prices are a consequence of the money creation process (Heinsohn and Steiger, 2002: 309-310, 2013: 67-68, 108-109). Here, the money-creating credit contract forces an evaluation of the property underlying the transaction in quantities of a money of account that is subsequently applied to all monetary transactions. The monetary standard is set as an abstract standard and ‘must not be mistaken for a tangible standard derived from a physical standard *good*’ (Heinsohn and Steiger, 2013: 67).

For instance, if a bank purchases a plot of land and pays in its own notes, the price of the land is set as part of the process (Stadermann, 2006: 63, Decker, 2013: 156, Fn 47). Similarly, the debtor’s property is evaluated as part of the money creation process if loan security is involved. In turn the debtor / producer must set the prices of the produced commodities in the same money of account to generate the proceeds to repay the loan (Heinsohn and Steiger, 2013: 107-108). Prices of other assets are then determined in line with this price anchor. In contrast to ‘the neoclassical model of a real barter economy’, prices are always set as absolute money prices and based on ‘*nominal* contracts denominated in money of account’ (Heinsohn and Steiger, 2013: 107).

The same relationships between property, creditor’s money, money of account and prices are seen to operate in modern central banking systems. Here, the

‘central note-issuing bank lends (1) central bank notes, in the first instance secured by its own capital, to the commercial bank. At the same time it drafts (2) a credit contract, which is primarily secured by tradable debt securities held by the commercial bank, which represent claims against third-party property, sold to the commercial bank by private and government debtors’ (Heinsohn and Steiger, 2013: 83).

Despite their status as fiat money, central bank notes are still redeemable in property ‘because commercial banks, which have obtained the notes by way of credit from the central bank, must be able to repay the notes in order to have *their* loan security *released*’ (Heinsohn and Steiger, 2013: 94). While today’s central banks no longer stabilise the price of gold, the debt securities underlying central bank money creation in lending or re-purchase operations still obtained their prices as a result of this process (Stadermann, 2010: 253).

The status of central bank money as legal tender also creates the opportunity to finance governments through central bank loans or debt purchases, or to allocate central bank funds to private institutions by accepting discount material that no longer has a genuine property basis, for example, instruments that are only acceptable via government guarantees. These mechanisms replace creditor’s money that is backed by private property and created in response to private

⁵ Original: ‘Die Münze aus Edelmetall war aber [...] niemals etwas anderes als eine auf Edelmetall statt auf Papier gedruckte Banknote’.

transaction needs, with 'debtor's money' representing 'a direct monetization of state debt by the central bank' (Heinsohn and Steiger, 2013: 37).

Heinsohn and Steiger's line of development therefore leads from the division and allocation of land property; to the separation of ownership and possession; the creation of creditor's money in secured creditor-debtor contracts; the establishment of money of account in these contracts; and finally to the setting of nominal money prices. The result is a network of nominal obligations.

While this picture of monetary arrangements based on creditor's money is well evidenced in modern systems, we argue that there is a need to expand the analysis in relation to ancient, early-modern, colonial and other systems that pre-date the era of central banks.

First, there is strong evidence that debt contracts in the ancient Near East, ancient Rome and Athens were specified in weight units of silver and bronze and discharged by weighing over extensive periods (Postgate, 1992: 203; Kroll, 2008: 12-14; Renger, 1995: 310; Seaford, 2004: 321;). In colonial economies, commodities such as wheat and livestock were at times declared legal tender and used to discharge obligations (see for example, Decker, 2010: 73). Commodities must therefore be integrated into an ownership-based theory of money.

Second, for coinage to be creditor's money it must be issued by private individuals in creditor-debtor contracts. While the private origin of coins is considered plausible (Seaford, 2004: 134), once under state control, coins were no longer predominately created through private contracts but instead issued based on state expenditure needs, which is considered 'far and away the most important means by which coinage was put into circulation in most ancient contexts' (Howgego, 1995: 34). Hence, the role of state-issued coins requires further analysis.

Third, creditor's money is the result of a fairly sophisticated secured loan contract between a creditor and a debtor, effectively assuming that notes were issued from the very beginning by a creditor in a bank-like fashion. While accurate when banks have become the dominant players, there are many documented cases where debtor notes and book debts play a significance role as means of payment. Examples include ancient Rome, early modern England and the colonies of the British Empire.

Fourth, Heinsohn and Steiger assumed that creditor's money has the 'capacity to finally settle contracts' (Heinsohn and Steiger, 2006: 492)⁶. While creditor's money in the form of central bank notes fulfils this criteria, notes of a typical 19th century private bank were redeemable in coins. For example, banks in New South Wales cleared their mutual balances by using gold coins by tale. This was similar to the banks of New York (Decker, 2010:175). It has therefore been argued that creditor's money in this period was complemented by 'settlement assets' taking the form of commodities, state debt, token coins and specie to 'finally close specific transactions' and to

⁶ Final settlement is also a defining attribute of money for Riese (1995: 55), Stadermann (2002: 8), Hawtrey (1923: 15) and Keynes (1930: 3).

'provide an acknowledged way in which claims against a note issuer's property can be discharged with something other than the issuer's own liability' (Decker, 2010: 175).

This suggests that there is a need to more fully integrate commodities, coinage, state-issued payment instruments and cases where payment instruments are created outside a banking system.

2. Claims to property

Heinsohn and Steiger's concept of 'creditor's money' was expanded into the more generalised concept of 'claims to property' in Decker (2015b). Claims to property not only include creditor-issued notes but also instruments and book entries created by debtors. In this section, building on Decker (2015b), we develop this concept in more detail. We first look at the legal basis of claims and their enforcement. This is followed by a review of the historical role of debtor-issued claims as means of payment alongside creditor-issued claims. We then discuss the quantification and settlement of claims and highlight the role that commodities and state-issued means of payment play in this context.

a. Legal basis of claims to property and their enforcement

Following the division and allocation of property, the legal basis of a debt becomes the ability of the creditor to enforce claims and recover assets from the property of the debtor, including the debtor as a person. It is indicative of the central role that creditor-debtor relations must have played right at the beginning of ownership-based systems, that the earliest known legislation in the ancient Near East⁷, ancient Athens⁸ and ancient Rome⁹ deal with the issues of debt, loan security and the enslavement for debt as the result of creditor actions.

Ancient and modern law systems provide two main mechanisms to recover property from defaulting debtors, general debt recovery actions and loan security over identified assets. For instance, the law of Athens (c. 435-322 BC) provided that on non-payment a creditor could take possession of the debtor's property and bring a case for ejectment. Hence, the 'debtor's property continued to be subject of forfeiture' until the debt was repaid (MacDowell, 1978: 142). Roman law incentivised debtors to release their property through the action *manus iniectio*. If payment, following a successful judgment, was not made within the required time, the creditor could imprison his debtor and after a mandated period kill him or alternatively sell him as a slave abroad (Kaser, 1996: 143). In later times, personal execution was complemented by execution against the debtor's property (Kaser, 1996: 626). English law allowed creditors to imprison insolvent debtors, a procedure only abolished (with some exceptions) by the Debtors Act of 1869. Modern insolvency law provides for the liquidation of a debtor's assets, the distribution to preferential creditors and the distribution of the remaining proceeds to unsecured creditors in proportion to the quantity of their claims (Goode, 2004: 829).

⁷ Cancellation of debts, periodic release of people who were enslaved for debt (Westbrook, 2003a: 16).

⁸ Freeing of debt-bondsmen, abolition of debt-bondage, cancellation of existing debts (Finley, 1981: 157).

⁹ Maximum interest rate, treatment of defaulting debtors in Twelve Tables (Kaser, 1971: 167, 1996: 143).

Loan security, on the other hand, enables creditors to more quickly recoup amounts owed and provides protection against competing claims from unsecured creditors. Evidence for the taking of loan security is available from the very beginning of ownership-based systems. Already Solon's reforms (c. 594 BC) mention mortgage stones (*horoi*), which evidenced the hypothecation of land. About 250 *horoi* have been found and documented, showing three types of non-possessory security including the hypothec (Millet, 1985: viii). Security is also well evidenced in ancient Near Eastern law (Westbrook, 2003a, b), and Roman law created the institutions of pledge (*pignus*), mortgage (*fiducia*) and charge (*hypotheca*), which became the model for modern security regimes (see Decker and McCracken, 2015 for an overview).

From this it follows that obligations entered into by note-issuing creditors as well as those by debtors (through notes, secured and unsecured loan contracts, or book debts etc.) ultimately have a property basis. The concept of 'claim to property' therefore represents a 'potential of forfeiture' or burden placed on creditor or debtor property (including security interests) that makes the claim valuable. As a consequence, claims can endogenously and elastically be created to meet payment obligations, while allowing the involved parties to remain in possession of their assets. Claims to property are not created 'out of nothing'¹⁰. In contrast, secured and unsecured claims monetise property assets, importantly immobile assets such as land.¹¹ This monetisation or 'melting down' (Steuart, 1767: Vol I, 376) of property is at the core of any ownership-based system.

b. Claims to property as means of payment

There are many historical examples attesting to the payment of debtor-issued alongside creditor-issued claims. Prominent examples from ancient Near Eastern law include merchant accounts, promissory notes and debit notes in the Neo-Sumerian period (Lafont and Westbrook, 2003: 212), transferable loan contracts in the Old Babylonian period (Westbrook, 2003b: 405) and debt notes in the Neo-Babylonian period (Oelsner, Wells and Wunsch, 2003: 950), with the setting off of debts frequently practised (Renger, 1995: 301-302).

In early modern England, 'domestic commerce ran on credit' (Kerridge, 1988: 33) with manufacturers, shopkeepers and tradesmen 'involved in complex webs of debt and credit' (Wrightson, 2002: 293). Private individuals kept book accounts (Kerridge, 1988: 33) and periodically set-off debts. Only remaining balances were settled in specie:

¹⁰ Contra Schumpeter, who argued that purchasing power could be created 'out of nothing' ('aus Nichts') and that the essence of credit was its independence of pre-existing commodities or assets (Schumpeter, 1934: 109, 146); see Heinsohn and Steiger (2013: 20). Stadermann (1994b: 139-140) has argued that Schumpeter had failed to recognise the difference between a monetary system based on sound commercial bills and a system based on mere accommodation bills. The latter were discounted by the Reichsbank in ever increasing numbers in the lead up to the German Hyperinflation and at a time when Schumpeter prepared the 2nd edition. This meant that banks could indeed create and allocate funds 'out of nothing', contributing to the destruction of the monetary system of the Weimar Republic.

¹¹ This can include claims to future property and in some cases the discounted value of future cash flows.

[m]en went on setting over debts one against another until they encountered someone able and willing to pay cash and so end the credit chain' (Kerridge, 1988: 40).

Trade relied on a system of factors and middlemen, for precisely the reason, that it greatly increased the opportunities for mutual set-offs to occur (Rogers, 1995: 111). It has been estimated that 'in the period 1538-1660 the ratio of money (coins) to debts by bond, bill obligatory and book was on average 1:9'; with the inclusion of 'moneylenders, usurers', bankers and inland bills of exchange changing 'the general ratio to something like 1:20' (Kerridge, 1988: 98-99). In later periods, merchants or industrialists, based on their central role in the payment system, developed into 'bankers', with 783 country banks in England and Wales in 1810 discounting private bills and notes (Presnell, 1956: 11, 14, 292). Similar developments took place elsewhere in Europe. Bills, notes and book accounts were also extensively relied upon in the colonies of the British Empire. For instance, in the early colony of New South Wales, which had been set-up as a penal colony without any monetary arrangements or bank, promissory notes, bills and book accounts immediately emerged as the predominant means of payment (Decker, 2010: 65-71, 2011: 73).

The situation in ancient Greece and Rome has long been regarded as different. It was held that the Greeks and Romans had no negotiable instruments and all money consisted of coins (for a discussion see Harris, 2008: 193, 174). This has led authors to believe that elastically created credit money was a special characteristic or even the 'essence' of modern capitalism (for example, Ingham, 2004: 104-108). This must surprise, given that it was the Greeks and Romans who created the prototypes of ownership-based societies and the foundations of property law as we know it today. If individuals in the ancient Near East, early modern and modern Europe monetised their assets by issuing claims to their property, why not the Greeks and Romans?

These assumptions have now been challenged (Cohen, 2008; Harris, 2008) and there is a 'growing consensus that complex forms of credit and cash-less payments were essential at least from the Hellenistic period onwards' (von Reden, 2010: 94). For ancient Athens, Cohen has argued that the money supply at Athens was made elastic and substantially increased through bank deposits (Cohen, 2008:78-79). For ancient Rome, Harris has shown that *nomina* (outstanding loans) were payment instruments of critical importance. *Nomina* were transferred, used as a means of payment and there was even a market for *nomina*. He has argued that 'debt was in fact the lifeblood of the Roman economy' (Harris, 2008: 184, 192-193).

These findings have long been supported by the legal evidence. Since the early republic, Roman citizens kept account books, the '*codex accepti et expensi*' (Kaser, 1971: 543). Obligations were documented by making entries in the account book of the creditor (*nomina transscripticia*). Written acknowledgements by the debtor could also be set up as additional evidence and fragmentary tablets were recovered from Herculaneum, showing what is believed to be an index of *chirographa* (notes of hand) with reference to the corresponding entry in the account book (Arangio-Ruiz, 1948: 15; Kaser: 1971: 544). Courts treated law suits on book entries as they treated suits on actual cash loans, and *nomina*, as movables, could be seized from insolvent debtors and pledged (Roby, 1902: 285, 440). Roman law enforced *chirographa* and *sygrapha*, written debt notes peculiar to people of

the Greek civilisation. The Ephesian Debt Law of 85 BC refers to notes of hand (*cheirographa*, Wankel, 1979). In later periods of the Roman Empire, written debt notes became the standard form of documenting loan contracts (Kaser, 1975: 369, 377).

This system of private book accounts and notes was enhanced with the emergence of banking, which became widespread in Rome (evidenced from 318 BC; Andreau 1999: 30). Bank clients could order their bankers to make payment to other parties and cheques existed in some areas (Andreau, 1999: 42). Bank advances created by book entry could be secured by mortgage (*fiducia*) (Roby, 1902: 101-102) and there is evidence that ancient banks practised 'fractional reserve banking', with bank funds created by book entry exceeding the amount of coin reserves (Cohen, 2008: 77; Mrozek, 1985: 320; Harris, 2008: 187; Bogaert, 1994: 21).

c. Quantification of claims

With property divided and rules for enforcing obligations and recovering property from insolvent debtors in place, a question arises as to how claims to physically different property assets can be quantified and reduced to a common economic measure. As discussed in Section 1, Heinsohn and Steiger argued that this is resolved in the act of (creditor's) money creation. The associated creditor-debtor contract must be specified in an abstract nominal unit, the money of account (Steuart, 1767: Vol I, 526). At the same time the prices of the underlying property assets are set.

However, there is a large body of historical evidence for debtor-issued claims specified in weight units of a designated commodity, reflected, for example, in the Babylonian system of *shekel* (of c. 8.3g), *mina* and *talent*, with the Akkadian term *siqlu* (*shekel*) meaning weight (Renger, 1995: 288). Property assets were then assigned prices in the number of weight units of a designated commodity, for instance, silver as evidenced in Ur III merchant accounts or price lists contained in the Eshnunna law code (Postgate, 1992: 193, 201, 204). Another prominent example is the use of weight units of bronze (*aes rude*) in ancient Rome, with property subject to a law suit evaluated in asses (1 *as* = 1 *libra* (327g) bronze) (Twelve Tables II; Kaser, 1996: 83).

This historical association of monetary units with standard weight units has created significant theoretical difficulties. Traditionally, silver has been simply identified as money¹² serving as the standard commodity, which combined with the unit quantity provides the unit of account. In the neoclassical model of a barter exchange economy with relative prices, this standard commodity has always the price '1'. In this view, it is the commodity that gives money its value. However, money of account is an abstract scale for measuring debts (Hawtrey, 1923: 188) and cannot be a physical good:

¹² See for example Schorr (1913) or Skaist (1994). There is no word for 'money' in Sumerian or Akkadian (Renger, 1995: 282).

‘even today many people lack the capacity to understand that money of account is an abstract unit that is used to *set* asset prices, and that assets do not *have* a value to which one could link money’¹³ (Stadermann, 2006: 240).

Consequently, even when using a weight standard, silver is still assigned a price in the designated unit for measuring debts like any other asset. The money of account is not the amount of silver but the scale or number of units, i.e. ‘money in this context is no more a commodity than the Celsius scale is temperature’ (Stadermann 2006, 240)¹⁴. In the case of one *shekel* (8.3g) of silver, the price in *shekel* is ‘1’. However, this relationship between the unit and the asset is not permanent but relies on a price setting process that maintains but can also redefine the relationship.¹⁵

In the case of the Ur III merchant, prices were set and confirmed in units of *shekel* each time the quantity and price of incoming and outgoing goods were entered into the merchant’s account book. This can be done by mere book entry as ‘we can hardly suppose that each of the individual receipts was physically converted to silver’ (Postgate, 1992: 203). In a similar fashion price relationships are established in loan contracts, which stipulate the price in *shekel* together with the amount of the commodity borrowed (Schorr, 1913: 89). In turn, secured loan contracts require a price evaluation of the underlying security, for example, land, labour services if slaves are pledged, or proceeds from the land if antichretic pledges are used.

We therefore conclude that money of account and prices can also be established through debtor-issued notes and loan contracts including those specified in weight units. The relationships between property, creditor’s money, money of account and prices identified by Heinsohn and Steiger also hold for debtor-issued claims and do not require the creation of creditor’s money in a bank-like fashion.

It should be noted at this point that the establishment of money of account in loan contracts implies that the monetary standard can emerge as the result of a self-organising process. The early colony of New South Wales provides an interesting example for this. Contrary to government proclamations mandating a ‘£ sterling’ standard, Sydney merchants issued and redeemed small notes denominated in ‘£ currency’, thereby creating their own monetary standard. Courts subsequently enforced ‘£ currency’ obligations (Decker, 2011: 77-81).

¹³ Original: ‘Noch heute fehlt vielen Menschen die Fähigkeit zu sehen, dass das Rechengeld eine abstrakte Einheit ist, mit der die Vermögenswerte *bewertet werden* und nicht die Vermögenswerte einen Wert *haben*, an den man das Geld binden könnte’ (emphasis in original).

¹⁴ Original: ‘Geld ist in diesem Zusammenhang so wenig Ware, wie die Celsiusskala Temperatur ist’.

¹⁵ Or as Hawtrey (1923: 188) noted: ‘the unit of account is that which persists even when the standard changes [...] a pound is a pound [...] and can only be defined as the English unit for the calculation of debt’.

d. Settlement of claims

With claims to property made quantifiable in terms of an abstract monetary standard, the money of account, a question arises as to how claims to property are finally settled. Heinsohn and Steiger suggested that monetary obligations are finally settled in creditor's money. However, historically the discharge of obligations often took place by delivery of a commodity specified in the loan contract or by a designed number of coins.

For instance, Old-Babylonian loan contracts denominated in *shekel* were discharged by the delivery of the associated quantity of silver (by weight) or with an alternative commodity at the market or statutory rate (Schorr, 1913: 75-78; Skaist, 1994: 192; Westbrook, 2003b: 404). The underlying commodities are fungibles. This principle is also reflected in the standard type of loan contract (*mutuum*) in Roman law, requiring the counting, weighing or measuring of fungibles (Roby, 1902: 66-67; Kaser, 1971: 170, 530). Here the requirement is to return a specified count, measure or weight of a commodity at some future time but not the return of the original objects, which in other loan types must be carefully used and restored. This explains the reason for the prominent role of fungibles in loan contracts. The lent commodity is interchangeable and can become the property of the borrower, who can use it as he sees fit.

While the reasons for the introduction of coinage are considered 'irrecoverable' (Seaford, 2004: 134), there is some evidence that state-issued coinage addressed situations where shortages in the supply of silver caused periodic monetary crises. These could now be mitigated by the introduction of token coinage or debased silver coinage, both issued by the state (Heinsohn, 1984: 140; Heinsohn and Steiger, 2013: 76-77; Seaford, 2004: 137-139). Obligations and prices continued to be expressed in the same money of account (e.g. *shekel* or *drachme*) but the discharge now occurred by counting out a corresponding number of coins and not by weighing out a certain quantity of a commodity. This meant that obligations could now be discharged based on the principles of nominalism (Knapp, 1923:7), i.e. with designated assets which 'if added together according to the nominal value indicated thereon, produce a sum equal to the amount of the debt [...] regardless of both their intrinsic and their functional value' (Mann, 1971: 76).

We conclude that final settlement not only occurred in creditor's money but importantly through the use of fungibles and state-issued coins (and other state-issued instruments). Claims to property have often required an associated asset that could finally settle obligations. In relation to the nature of coinage, Heinsohn and Steiger argued that a precious metal coin under the gold standard is to be interpreted as 'a bank-note printed on precious metal rather than paper' (Heinsohn and Steiger, 2002: 287). It could perhaps be argued that a state-issued coin is in its essence not a bank note but a state-issued debt note printed on gold, the price of which is stabilised through the actions of the banks.

3. Claims to property as a foundation of monetary systems

The cases discussed in the previous Sections reveal a broader economic principle. Property ownership, security and the associated enforcement of claims create the backing that makes creditor and debtor-issued claims valuable. The legal separation of ownership and possession then allows property owners to meet payment obligations by issuing claims against their property, while staying in possession and continuing with the use of their production assets; for example, land, livestock and slaves. Ownership-based systems are built on the basis that property owners can monetise assets by issuing such claims. Claims to property therefore should be regarded as one of the underlying foundations of monetary systems.

Creditor-issued claims become dominant means of payment for three reasons. First, the debtors are freed from the obligation to redeem their own notes on demand, which is now carried out by specialised bankers, for which they are compensated with interest (Steuart, 1767: Vol II, 131). Second, banking further increases the opportunities for set-offs to occur. Third, banks can set and stabilise property prices as measured in their own notes, for example, as exercised under the gold standard. The rise of bank money implied that private bills and notes were no longer used as means of payment directly but became discount material. The acquisition of funds now required access to the bank counter, eligible bills and notes, loan security and interest. Banks now created the allocation rules of who would receive the freshly created funds.

Historically, claims to property were documented as promises to deliver a designated asset corresponding to a nominal sum specified in the money of account. Fungibles, state-issued coins and state-debt instruments were used to finally discharge such promises. The introduction of a universal money of account then allowed alternative forms of discharges and in many instances property owners avoided transactions in settlement assets altogether by creating new claims or setting off their mutual claims. As the majority of economic dealings does not produce one-off transactions but create circular, self-liquidating payment flows, transactions are likely to be matched by other off-setting transactions. This makes claims to property particularly useful in economic dealings.

This suggests a re-interpretation of the monetary role that fungibles have played historically. Commodities like silver, which are commonly identified as early forms of 'money', attained a special role - not because of their role in barter exchanges - but due to the fact that they became the preferred or legally mandated asset to settle debts.¹⁶ This classification as 'settlement asset' (Decker 2010: 175) recognises the economic importance of commodities but at the same time reflects the lack of historical evidence for systems based on barter exchanges.¹⁷ A similar argument can be made

¹⁶ Notwithstanding the fact that there are always transactions that are directly settled.

¹⁷ For a general discussion of barter see Heinsohn and Steiger (2013: 3-6).; for tribal communities see Dalton (1982); for colonial economies see Decker (2010: 88-91). In his comprehensive review of ancient Near Eastern law Westbrook concluded: 'The core contracts that are found in any modern legal system are present in the ancient Near East: sale, hire, deposit, loan, pledge, suretyship, and partnership [...] *barter of goods is rarely*

in relation to state-issued coins and state debt instruments, which in their essence also facilitate the final settlement of claims.

A monetary system based on state-issued coins or physical commodities as settlement assets is inherently unstable. The volume of state-issued coins is determined by state expenditure, whereas commodities are subject to supply constraints. Therefore, the available volume of settlement assets might not match the amount needed for private transaction needs. Once a shortage sets in and contracts can no longer be settled, a panic sets in and otherwise solvent individuals are faced with bankruptcy. Clearing house associations and central banks developed into lenders of last resort in response to this problem. The theoretical significance of this step is that it turned central bank money, created in loans with commercial banks and secured by eligible property, into the leading settlement asset. Settlement assets and bank-issued creditor's money merged (Decker, 2010: 177). This ensured that all principal property classes of an economy could be converted into settlement assets in a crisis, yet again demonstrating the nexus between property and money creation. The underlying basis of settlement could therefore be decoupled from state expenditure decisions and commodity supply constraints and be based on the property of the private sector.

This suggests that the line of development led from the establishment of ownership to the creation of debtor and creditor-issued claims to property, the specification of which constitutes money of account and defines settlement assets. Settlement with physical assets involves the transfer of possession alongside ownership. This constraint was first moderated by state-issued token coins and debt instruments, allowing settlement through the transfer of (non-physical) claims against the state (or the community as a whole) and then overcome by making creditor-claims issued by central banks the mandated settlement asset.

A framework based on claims to property and the associated categories of settlement assets and money of account therefore allows us to integrate commodities, state-issued coinage and instruments, debtor-issued claims as well as creditor-issued claims into an ownership-based theory of money. This synthesis also permits a more differentiated analysis of monetary arrangements than has previously been possible. TABLE 1 identifies seven archetypes of monetary arrangement in ownership-based systems.¹⁸ Type I deals with the monetary role of spits. It is considered extremely likely that iron spits performed monetary functions pre-dating coinage and were counted rather

attested' (Westbrook, 2003a: 68; emphasis added). One could speculate that barter exchanges occur precisely in situations where ownership and security are not available.

¹⁸ This leaves systems without property ownership. It has been shown elsewhere that tribal communities, feudal systems and socialist command systems only knew possession (for a summary, see Decker 2015a). As the creation of claims to property requires the separation of ownership and possession, they have no legal basis to exist in possession-based system. The situation is different for state-issued coins and instruments. It is conceivable that tokens resembling coins could be issued in possession-based command systems (or adopted from ownership-based systems) and used as a mechanism to allocate labour and extract dues and services. Evidence for the use of state-issued coinage does not necessarily imply the existence of an ownership-based economic system. An example is the use of coins and banknotes in state socialism; in their essence mere 'vouchers' (Heinsohn and Steiger, 2013: 10).

then weighed (Laum 1924: 116-117; Seaford, 2004: 108; von Reden, 2010: 22), but little information is available about the specific details. While speculative, type I could describe a situation conjectured by Heinsohn and Steiger (2013: 75), where creditor's money was issued by private individuals in the form of symbolic representations of property, embodied in objects such as spits. An alternative interpretation is that spits performed the role of a settlement asset, assuming that private claims to property could be documented in writing.

Type II describes early monetary systems without coinage such as the early Roman Republic and cases from the ancient Near East. Obligations are specified in weight units and finally discharged with a commodity by weighing out the required number of units. Creditor's money is evidenced in the form of bank deposits and merchant account entries. This type is an example of an ownership-based system that operates without coinage or other state-issued instruments.

TABLE 1: Archetypes of monetary systems based on ownership.

<i>Type</i>	<i>Money of account</i>	<i>Settlement assets</i>	<i>Creditor's money</i>	<i>Examples</i>
I	Nominal units	Spits, miniature tools	Spits, miniature tools	Ancient Greece
II	Weight units	Fungibles	Bank deposits	Ancient Rome
III	Nominal units	State-issued coinage	Bank deposits	Ancient Athens Ancient Rome
IV	Nominal units	State-issued coinage / state issued debt / fungibles	Bank notes Bank deposits	Colonies of the British Empire
V	Nominal units	State-issued coinage (specie)	Bank notes Bank deposits	19 th century Banks of New York and New South Wales
VI	Nominal units	Central bank notes / deposits	Central bank notes / deposits Commercial bank deposits (*)	German Bundesbank
VII	Nominal units	Central bank notes / deposits	Commercial bank deposits (**)	German Third Reich

(*) Claims to central bank notes/deposits. (**) May no longer be property based.

Type III reflects systems where fungibles are replaced by state-issued coins. Type IV includes systems where banks issue notes in addition to creating deposits. In some instances commodities and state paper issues performed the role of settlement assets, as seen in the colonies of the British Empire.

Type V is a system where private note-issuing banks dominate the payment system and stabilise the price of gold through their discount operations. Interbank settlement is conducted in specie by tale.

Types VI and VII represent systems with central banks acting as lenders of last resort. Here, central bank notes and deposits are also settlement assets. In Type VI the discount material is acquired in open markets and transactions are conducted as between unrelated third parties. Central bank notes

are created in response to transaction needs of the private sector at market interest rates, based on central bank capital and sound commercial bank collateral. The central bank in this model behaves like a private note-issuing bank. The notes are a derivative of property and created as part of a self-regulating process within a property and commercial law framework with minimal direct interference from the state.

In type VII these principles no longer hold. The central bank monetises state-issued debt instruments or provides loans to the state directly. Here, central bank notes have become state liabilities, the supply of which is determined by government decisions ('debtor's money') and central bank capital is no longer a consideration. This is not necessarily inconsistent with property ownership. Like in types III and IV the private banking system can still create funds based on property collateral from the private sector and set its own allocation rules. Types VI and VII are often difficult to distinguish and the transition between both systems can be a gradual one. In fact, a central bank can issue notes of both types, which can be in circulation undistinguishably at the same time. However, once state debt is monetised in substantial quantities or the discount material of selected private institutions is turned into eligible central bank collateral through mere government guarantees, the nexus between property ownership and money creation, and with it the basis of society, is being destroyed.¹⁹

The discussed cases perhaps help to illustrate why money is such a complex institution and has attracted so much controversy. If we consider final settlement as the essence of money, commodities, coinage and state-issued instruments including central bank money must be classified as money. By contrast, a view of money as debt must exclude commodities but is faced with the problem that there are many types of debt. A focus on creditor's money and its role in the monetisation of property, on the other hand, suggests that only bank-issued claims (private or central) are money in its proper form. Our analysis shows that these three perspectives on money can be integrated through a framework based on claims to property with the associated categories of settlement assets and money of account.

¹⁹ See Stadermann (1994b: 171-194), Heinsohn and Steiger (2013: 123-124) and Stadermann (2014).

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