Towards the New Theory of Commodity Money on Inconvertible Credit Money

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Abstract

Endogenous money supply theories have recently experienced a resurgence, but variance exists within these theories. We created a 2×2 matrix to analyze endogeneity and exogeneity across various money theories, with one axis representing the money supply and the other representing the logical generation of money. Many endogenous money supply theories consider inconvertible money exogenous, contending that money with finality is fiat money issued by central banks or governments. Nonetheless, some contemporary Marxian economists, particularly Unoists, argue that even inconvertible bank money remains credit money rooted in commodity value and is endogenous to the market economy. Banks issue credit money by lending or purchasing securities. Credit money is based on the value of commodities through the debtors' assets. To explain such credit money in the value-form theory, Unoist scholars have recently proposed new value-form theories, including a claim to commodity set, as well as branch structure and polymorphism of money.

1. Introduction

In response to the economic downturns in the 2000s, many central banks in developed countries implemented quantitative easing policies primarily based on monetarist exogenous monetary supply theory. However, these efforts did not produce the expected results. After extensive debate on monetary control, the exogenous monetary supply theory receded in the 2010s. Parallel to these policy shifts, some central banks published papers supporting endogenous monetary supply theories and dismissing the monetarist exogenous viewpoint (Saito 2023; McLeay, Radia, and Thomas 2014; Deutsche Bundesbank 2017). During this period, the increased interest in Modern Monetary Theory (MMT) also played a role in the

resurgence of endogenous monetary supply theories.

However, debates still exist even within these endogenous monetary supply theories. Some proponents of these theories criticize MMT for incorporating exogenous elements (e. g., Kanai 2023). This criticism arises because proponents of MMT believe that the central bank, which is integrated with the government, can inject money into the market exogenously.

Building on this, Marxian economic theorists contend that money is based on the value of commodities in the market. According to them, the endogenous viewpoint holds that money originates from commodities, whereas the exogenous viewpoint holds that money is created externally from commodities and injected into the market economy. Various money theories can thus be analyzed in a 2×2 matrix, with the axes representing the money supply and logical generation of money. The Marxian economic theorists stand on the endogeneity of both supply and logical generation.

Although Marxian economics offers insightful perspectives, two challenges arise in the discourse: the nature of central bank money and money after the suspension of gold convertibility. The following sections of this paper address these issues. First, the central bank, like commercial banks, operates within the framework of banking capital. Therefore, central bank money is based on the commodity's value through the debtors' assets.

Second, in the value-form theory, recent Unoist scholars, a group of Japanese Marxian economists, have attempted to explain the generation of inconvertible credit money based on commodity value. Inconvertible credit money, distinct from fiat state money, is a type of commodity money after the suspension of gold convertibility (Iwata 2021). For example, Obata (2009) proposed two types of commodity money: material and credit money. Credit money emerges from the tendency of an indirect exchange medium to become a claim. Subsequently, Sakura (2019) has distinguished between "Exchange-seeking form" and "Valuation-seeking form" in the simple form of value, thus broadening value-form theory. In the valuation-seeking form, many commodity owners may select a set of commodities with a stable value as a universal equivalent. By modifying Obata's (2009) method, Iwata (2022) has demonstrated that claims against a commodity owner with many indirect exchange media can evolve into credit money. Furthermore, Obata (2023), denying some parts of Obata (2009), has proposed the branch structure and polymorphism of money using the many simple forms of value.

This paper attempts to navigate these debates and theories to provide a comprehensive understanding of commodity money. The remainder of the article is structured as follows.

Section 2 presents a 2×2 matrix with axes representing the money supply and logical generation of money to clarify the dual interpretations of endogeneity and exogeneity of money. Section 3 discusses that both central and commercial banks operate as banking capital; thus, central bank money is also credit money based on commodity value. Section 4 delves into recent value-form theories of the Uno school, arguing that credit money derives its value from commodities. Finally, section 5 concludes this article.

2. Endogenous and Exogenous Monetary Perspectives: Supply and Generation of Money

2. 1　Exogenous aspects within certain endogenous money supply theories

For instance, Kanai (2023), a proponent of the endogenous money supply theory, has noted that while MMT is rooted in endogenous theory, it incorporates an exogenous aspect. In particular, MMT suggests that governments or central banks can freely inject money from outside the market economy by issuing government bonds, given their ability to redeem bonds in the local currency easily. Such a concept includes an exogenous element. Although the endogenous money supply theory proposes that banks issue money by granting credit, the credit must be based on sound demands that guarantee repayment. A pre-existing credit relationship supports the endogeneity of money. However, MMT seems to overlook the fundamental role of credit in money, rendering money partially exogenous and thereby deviating from the genuine endogenous money supply theory (Kanai 2023: 174, 181).

Figure 1 depicts the credit relationship prior to the money supply using a balance sheet to investigate his claim.

Figure 1.　Structure of credit money.

Debtors

Assets	Liabilities
(a)	Liabilities to bank

Banks

Assets	Liabilities
Claim	Deposit (credit money)

Depositor

Assets	Liabilities
Deposit (credit money)	Net worth

MMT claims that the government as a debtor and the central bank as a money issuer are integrated. Because the commodities purchased by the government are used up and

disappear, the content (a) remains unfulfilled. According to Kanai (2023), although repayment should be guaranteed, the nature of the debtor's asset (a) is not always specified. However, the endogenous money supply theories have historical roots in the real bill doctrine, which is based on ideas from Adam Smith, the Anti-Bullionists, and the Banking School. This doctrine assumes commodities are represented at (a) (Glasner 1992; Humphrey 1997).

2. 2 Distinction between endogenous and exogenous in Marxian economics

The principle of Marxian economics interprets the endogeneity and exogeneity of money by the generation of money, not the supply. For example, Yamaguchi, an Unoist scholar, argued that the endogenous perspective asserts that money arises from the commodity world, whereas the exogenous perspective claims that money is injected externally into the commodity economy. The value-form theory in Marxian economics to derive money aligns with the endogenous stance (Yamaguchi 2000: 240).

2. 3 The 2×2 matrix

Considering the variations within endogenous money supply theories and the distinctions made by Marxian economics, we can classify the diverse interpretations of money in Table 1.

Table 1. Classification of money theories.

		Theories of money supply	
		Exogenous	Endogenous
Theories of Money generation	Exogenous	Exogenous money supply theory	Endogenous money supply theory
	Endogenous	Metallism	Commodity theory of money

The classification is conceptual and binary. Various theories often exist between the polarities.

2. 3. 1 Exogenous money supply theories

Exogenous money supply theories posit that the government or central bank can inject money at will and adjust the quantity of money, regardless of initial market conditions.

These theories postulate that the changes in money quantity can directly impact changes in prices and/or production volume.

In terms of money generation, these theories assume that governments' legal tender provisions allow money to circulate exogenously to the market.

2. 3. 2　Metallism

Metallism views physical gold as the sole proper money. Regarding money generation, metallism is endogenous because gold is originally a commodity. As a result, metallism is one of the theories of commodity money. However, metallism does not recognize inconvertible credit money as commodity money. Therefore, we distinguish between metallism and the commodity theory of money (section 2. 3. 4). This distinction is important for understanding money after the suspension of gold convertibility.

Metallism views the money supply as exogenous. This is because metallism views the quantity of money as being determined by the amount of mined gold, regardless of the money demand influenced by the economic situation. Nonetheless, metallism's money supply can be endogenous in two scenarios. One possibility is that promises to pay gold money circulate as money, being issued flexibly in response to demand. However, if these promises are issued with considerable flexibility, void of gold's backing, the gold standard substantially ceases to exist. The other is when the inflow and outflow of hoarded money adjust the flow of money (Lapavitsas 2017: 70). However, this is not entirely realistic because it requires extremely large amounts of hoarded money to facilitate swift transactions.

2. 3. 3　Endogenous money supply theory

Originally, the endogenous money supply theory posits that money is supplied in response to the market's money demand.

In terms of the generation of money, these theories often lean toward the exogenous side. They assume that money can circulate only by the provision of legal tender; credit money from commercial banks can circulate only if it can be exchanged for legal tender.

2. 3. 4　Commodity theory of money in Marxian economics

Historically, many Marxian economists, based on metallism, believed that when gold convertibility was suspended, banknotes became exogenous state money. However, during Japan's "banknote controversy" in the 1950s and 1960s, some argued that as long as banknotes are issued on credit, inconvertible banknotes remain credit money rather than

state money (Iwata 2021).

According to recent Unoist scholars, money is theoretically commodity money whose value is derived from commodity value. They also distinguish two kinds of commodity money: material money, which circulates as physical objects, and credit money, in which commodity value is self-sustaining in the form of a claim (Obata 2009: 46–47). Credit money, which is issued through banking channels, is based on the commodity value depicted in (a) of Figure 1.

In terms of money supply, the theory of commodity money is endogenous because the bank can issue money in response to the money demand, backed by the value of commodities in debtors' assets.

2. 3. 5 Discrepancies between endogenous money supply theory and commodity money theory

Discrepancies between endogenous money supply theories and the commodity theory of money seem small but theoretically essential.

Endogenous money supply theories assume that exogenous legal tender accounts for a very small portion of money circulation, with the rest being deposit money issued on demand from non-bank economic agents endogenously. As a result, their divergence from the commodity theory of money often recedes in analyses of the current state of money and finance. However, when asked, "Why can bank-issued money circulate?" the typical response is, "Thanks to the government's legal tender provision." Herein lies the divergence between the two perspectives.

Although Unoist scholars recognize the importance of the legal tender provision,[1] they argue that such provisions are insufficient to ensure money circulation. The foundation of bank-issued money is the widespread trust of economic agents who consider money as a valid and trustworthy means of payment. If a legal tender is deemed unreliable or unsuitable for transactions, its mandatory use cannot be enforced in the market economy. Means of payment are contracted by means other than legal tender.

3. Central Bank as a Banking Capital

The divergence between endogenous money supply theories and the commodity theory of money is most prevalent when the central bank issues credit money. This section considers the operation of banking capitals and central banks.

3. 1　Essence of banks: Circulating debt as money through a credit and payment system

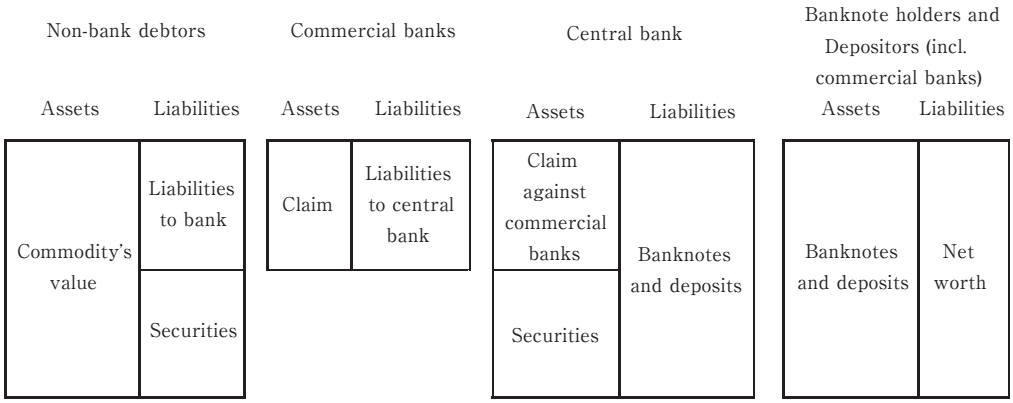
Banks' profits are primarily derived from interest earned on credit operations. Although the banking operations have expanded due to deregulation during the Neoliberal era, the core function of banks remains issuing and circulating their debt as money. They issue transaction accounts that "in law, in regulation, or in practice are payable on demand at par and are readily transferable to third parties" (Corrigan 1983: 13). This function distinguishes banks from non-bank financial institutions that lend money and provide financial services.

Banks strive to keep the value of their debt as money to keep it in circulation, just as industrial capitals strive to keep the quality of their products and promote the sale of their commodities. The banks' sound financial assets back up the trust in their credit money. Thus, the central bank also maintains the stability of the value of its currency, which is one of its important goals.

3. 2　Profits of central banking

Following Figure 1, we can analyze the central bank's operations using the following balance sheets in Figure 2:

Figure 2. Structure of credit money, including the central bank.



On the asset side, the central bank has claims against commercial banks. Before that, these commercial banks assess and lend to non-bank debtors, and the central bank then assessed and lent to these commercial banks. This double-layered credit check improves the soundness of central bank assets. Additionally, central banks acquire sound financial assets, primarily securities such as government bonds. The central bank usually purchases these

securities indirectly through market buyers of financial assets rather than directly from issuers. As a result, the central bank ensures that the assets are more sound than direct lending or purchase. Furthermore, these indirect operations allow the central bank to avoid competition with commercial banks, giving the inaccurate impression that the central bank is not for profit.

On the liability side, the central bank provides stable means of payment, such as banknotes and reserve deposits.

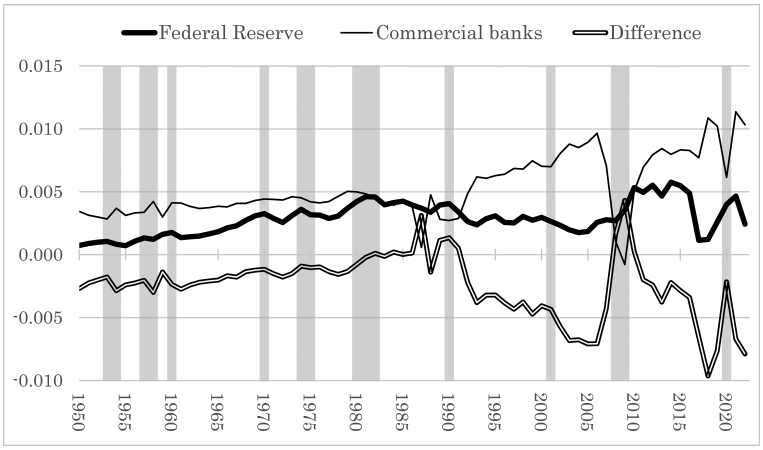
Although central banks operate with public objectives,[2] they continue to operate within the framework of banking capital, which aims to valorize (increase value). As long as central banks provide stable and useful payment means, they can circulate their debt as money at lower deposit interest rates. This allows them to secure profit even with low-yielding assets.

During financial crises, lending at high interest rates and purchasing securities at low prices result in even higher profits (for example, in Lehman shock, see Bernanke 2013: 99). Central banks operate profitably over longer periods than a single business cycle. More specifically, a sound banking business will invariably generate profits. Continuous and significant deficits imply that their assets might be unsound.

Figure 3 depicts the profit (net income) of the Federal Reserve and commercial banks in the United States.

The gray areas indicate recession. The Hodrick-Prescott filter with a smoothing

Figure 3. Profits of the Federal Reserve and Commercial Banks in the US as a Percentage of GDP Trend.



Data: Federal Reserve Annual Report, FDIC, NBER

parameter of λ＝100 was used to calculate the GDP trend.

Since the 1980s, during recessions, the Federal Reserve's profits have tended to increase, compared to those of commercial banks.

4. Recent value-form theories of Unoists: Towards the New Theory on Inconvertible Credit Money

This section explores the Unoist approach to deriving inconvertible credit money, based on commodity value, within value-form theory.

Uno logically unfolded the expression of a commodity's value without a direct link to embodied labor. Initially, he proposes that the owner of the commodity in the relative form desires the commodity in the equivalent form. Ultimately, Uno focused on only material money, such as gold money, and did not thoroughly investigate the nature of money after the suspension of gold convertibility.

4. 1　Sakura's (2019) method

In the value-form theory, contemporary Unoist scholars attempt to derive the concept of inconvertible credit money independent of gold money. Sakura (2019) has distinguished between "Exchange-seeking form" and "Valuation-seeking form," thereby broadening the scope of value-form theory as follows.

Commodity owner B initially seeks to exchange B's commodities for two pigs and expresses the value of several commodities using two pigs, as shown in equation (1).

B: (iron 0.5 kg, sugar 15 kg) → two pigs …… (1)

Here, the "→" symbolizes the exchange-seeking form.

Subsequently, B issues securities as a commitment to provide the value of iron 0.5 kg and sugar 15 kg, naming these securities ε.

Securities 1 ε := value of (iron 0.5 kg, sugar 15 kg) …… (2)

This presentation is not an expression of value but a definition of ε. Equation (1) can be rewritten as follows:

Securities 1 ε → two pigs …… (3)

To maintain the value of the securities ε, B must change the kind and quantity in the set

when the value relation between the commodities changes. If B keeps the value of ε consistent, other commodity owners would express the value of their commodities with ε. For example, consider that A expresses the value of A's 90 kg of wheat that A does not immediately seek to exchange.

wheat 90 kg = 8ε …… (4)

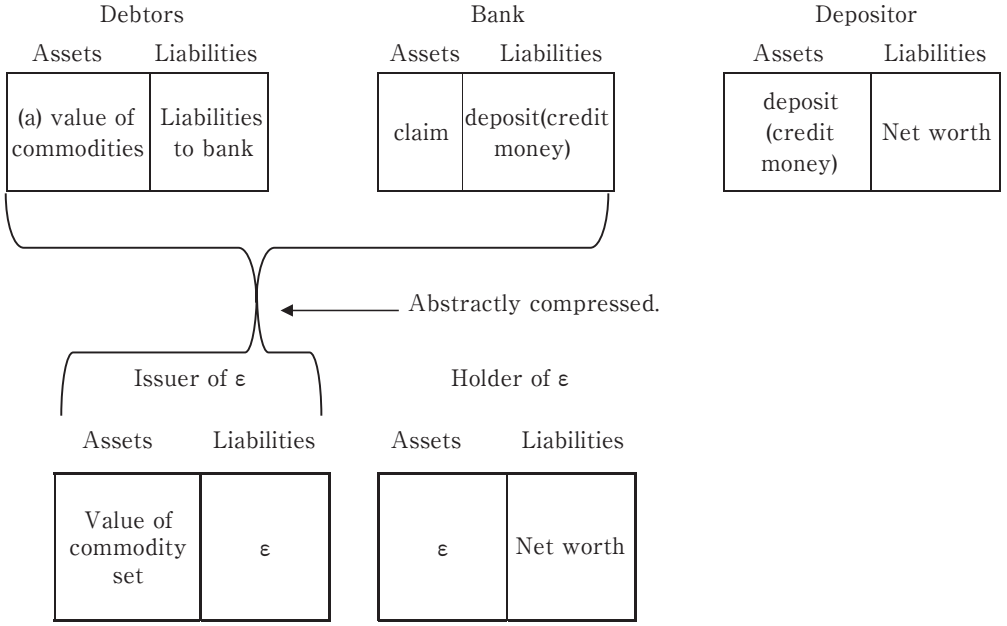
The "=" symbol in (4) indicates the valuation-seeking form. In (4) A uses securities ε to valuate the A's commodity, wheat 90 kg, but does not desire ε.

If many commodity owners express the value of their commodities using ε, ε would eventually become the universal equivalent.

One might question this method by asking, "Could such a process occur in reality?" However, the value-form theory does not examine the historical process of money emerging from barter. Sakura's (2019) method abstractly shows that bank-issued credit money is backed by the value of many commodities in debtors to banks.

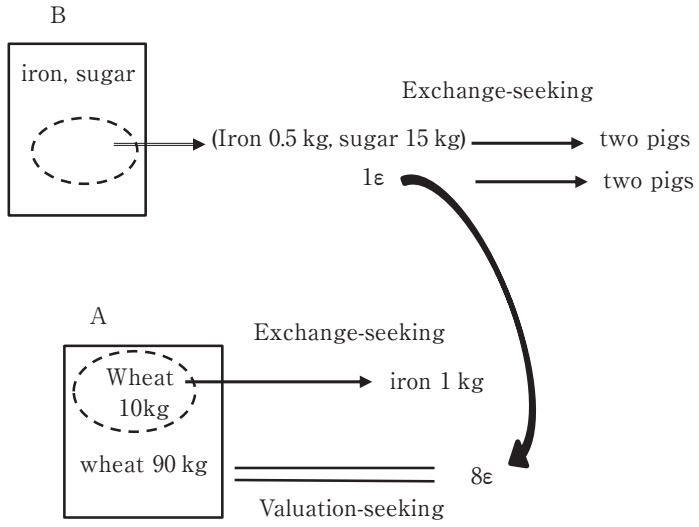
Following Figure 1, we can show that the structure of ε as credit money can be shown in Figure 4:

Figure 4. Structure of credit money, compressed to commodity set.



To summarize, Sakura's (2019) value-form theory is illustrated in Figure 5:

Figure 5. Illustration of Sakura's (2019) theory of value form.



In essence, Sakura's (2019) method consists of two parts: one in which an owner of commodities makes a set of commodities using the exchange-seeking form and the other in which the set becomes universal equivalent through the valuation-seeking form adopted by other owners. In the following subsections, we juxtapose these forms against the methods of Marx and Uno.

4. 2　Marx's valuation-seeking form

Marx started with the simple form of value. For example:

20 yards of linen = 1 coat …… (5)

Without money, comprehensively expressing the value of 20 yards of linen would require an infinite number of value-forms by all other commodities, as in equation (6). This is the valuation-seeking form.

$$\text{20 yards of linen} = \begin{cases} \text{1 coat} & \text{or} \\ \text{10 pounds tea} & \text{or} \\ \text{40 pounds coffee} & \text{or} \\ \text{1 quarter corn} & \text{or} \cdots\cdots \quad (6) \\ \text{2 ounces gold} & \text{or} \\ \text{1/2 to iron} & \text{or} \\ \text{etc.} \end{cases}$$

Marx later inverted the sides of equation (6), transforming linen into a universal equivalent

(Marx 1996: 75). However, this process has the potential to produce an infinite number of universal equivalents, casting doubt on its efficacy in producing a single universal equivalent or monetary form.

4. 3 Uno's exchange-seeking form

Using the exchange-seeking form consistently, Uno derived the universal equivalent without inverting the sides of the value expression (Uno 1977: 7). Uno's method can be demonstrated succinctly using Iwata's (2022) notation method. In equation (5), denote the commodity "linen" as C_1 and its owner as $P(C_1)$. Following that, denote the commodities that $P(C_1)$ desires as $C^{-1} \circ P(C_1)$. "C^{-1}" means commodities that $P(C_1)$ does not own but desires. The symbol "$\circ$" denotes a composite function, which can also be written as $C^{-1}(P(C_1))$. $C^{-1} \circ P(C_1)$ is a set of several commodities.

Denote the commodity commonly desired by the owners of commodities $\{C_i; i \in K\}$ as A_K as follows:

$$A_K = \cap \{C^{-1} \circ P(C_i); i \in K\} \cdots\cdots (7)$$

The commodities that appear most frequently in A_K become universal equivalents. Once a commodity becomes the universal equivalent, it is pursued no longer as a direct object of desire but as a medium of indirect exchange (Uno 1977: 7).

However, Uno's method yielded only material money, consistent with "metallism" as depicted in Table 1.

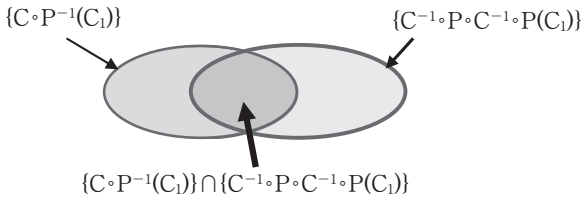
4. 4 Obata's (2009) method of indirect exchange

Obata (2009) focused on the indirect exchange in the expanded form of value and showed how the equivalent becomes a receivable claim. Continuing from the previous subsection, using Iwata's (2022) notation method, we denote the owners of $C^{-1} \circ P(C_1)$ as $P \circ C^{-1} \circ P(C_1)$, and their desired commodities as $C^{-1} \circ P \circ C^{-1} \circ P(C_1)$. If $C_1 \subset C^{-1} \circ P \circ C^{-1} \circ P(C_1)$, a direct exchange is possible. If not, $P(C_1)$ will seek the commodity owners desiring C_1 and possessing $C^{-1} \circ P \circ C^{-1} \circ P(C_1)$. This arrangement facilitates indirect exchange for $P(C_1)$.

In this context, we denote the owners of commodities who desire C_1 but do not own it as $P^{-1}(C_1)$. The commodities owned by $P^{-1}(C_1)$ are represented as $C \circ P^{-1}(C_1)$.

The set of commodities mediating indirect exchange is shown in Figure 6:

Figure 6. Commodity set that serves as a means of indirect exchange.



The intersection of $\{C \circ P^{-1}(C_1)\}$ and $\{C^{-1} \circ P \circ C^{-1} \circ P(C_1)\}$ serves as media for indirect exchange. Using this commodity set, the following forms of value emerge:

Initially, $P(C_1)$ expresses the value of C_1 in terms of the commodity desired.

$$C_1 \rightarrow C^{-1} \circ P(C_1) \quad \cdots\cdots \quad (8)$$

This presentation is in the exchange-seeking form. Unable to exchange directly, $P(C_1)$ resorts to expressing C_1's value using media of indirect exchange:

$$C_1 \rightarrow \{C \circ P^{-1}(C_1)\} \cap \{C^{-1} \circ P \circ C^{-1} \circ P(C_1)\} \quad \cdots\cdots \quad (9)$$

The right-hand side of equation (9) includes the commodities that the owners of $C^{-1} \circ P(C_1)$ desire. The owners of $C^{-1} \circ P(C_1)$ express their commodity as:

$$C^{-1} \circ P(C_1) \rightarrow \{C \circ P^{-1}(C_1)\} \cap \{C^{-1} \circ P \circ C^{-1} \circ P(C_1)\} \quad \cdots\cdots \quad (10)$$

For $P(C_1)$, any commodity within the set $\{C \circ P^{-1}(C_1)\} \cap \{C^{-1} \circ P \circ C^{-1} \circ P(C_1)\}$ qualifies as the medium of indirect exchange. The medium chosen by many commodity owners evolves into a universal equivalent.

This method does not require that the equivalent be a direct object of desire for the owner of a commodity in the relative value-form. As a result, the medium does not have to be physical; it can be in the form of a receivable claim, indicating that the universal equivalent can be a claim. Thus, credit money, a kind of commodity money, refers to money in which commodity value becomes self-sustaining in the form of a claim (Obata 2009: 46–47).

4. 5　Iwata's (2022) method of obligations to the commodity aggregate

In Iwata (2022), I have made two significant changes to the method proposed by Obata (2009):

a. Rather than limiting the media of indirect exchanges to a single commodity, I assumed that an owner possesses a set of these media. The owner is referred to as X.

b. Commodities in relative form of value, $\{C_i\}$, are also treated as claims.

Point a) signifies that X's commodities are more frequently used for indirect exchange than a single medium. Furthermore, as a result of point b), when X gains a claim to receive $\{C_1\}$ in exchange for the promise to deliver the commodity, X now has multiple claims to receive commodities in addition to the commodities that X initially owns.

Consider a commodity market where many owners express simple forms of value. Let us denote the set of owners of commodities in the relative form as $\{P(C_i)\}$, and those with commodities in the equivalent form as $\{P \circ C^{-1} \circ P(C_i)\}$. Let the initial commodities owned by X be $\{C_{X,k}\}$. Following Figure 1, the relationship among $\{P(C_i)\}$, $\{P \circ C^{-1} \circ P(C_i)\}$, and X is illustrated in Figure 7:

Figure 7. Structure of expanded indirect exchange.

$\{P(C_i)\}$

Assets	Liabilities and Net worth
$C^{-1} \circ P(C_i)$	Obligation to deliver $\{C_i\}$
$\{C_i\}$	Net worth

X

Assets	Liabilities and Net worth
Claim to receive $\{C_i\}$	Obligation to deliver $\{C^{-1} \circ P \circ C^{-1} \circ P(C_i)\}$
$\{C_{X,k}\}$	Net worth

$\{P \circ C^{-1} \circ P(C_i)\}$

Assets	Liabilities and Net worth
Claim to receive $\{C^{-1} \circ P \circ C^{-1} \circ P(C_i)\}$	Net worth

$i=1, 2, 3 \cdots n$, $k=1, 2, 3 \cdots m$

The assets of X consist of $\{C_i\} \cup \{C_{X,k}\}$. Here, $\{C_i\}$ are claims and $\{C_{X,k}\}$ are tangible. If $\{C_i\} \cup \{C_{X,k}\}$ encompasses $\{C^{-1} \circ P \circ C^{-1} \circ P(C_i)\}$, the commodities under X can facilitate indirect exchange between $\{C_i\}$ and $\{C^{-1} \circ P(C_i)\}$.

Notably, the claim against X is like an expanded form of value, lacking a unified unit of account. One practical resolution is to use the unit name of a specific commodity under X as a nominal unit of value of claims. Even if the nominal value of the claim differs from the material value of this commodity, the nominal value remains effective. Historically, such discrepancies occasionally happened due to inconsistencies between the nominal values and material values in coins.

X is not a capital because the valorization (increase in value) is not recognizable without money. Instead, X strives to maximize commodity-economic gains through the following

ways.

1) X assesses whether other owners can easily place $\{C_i\}$ in the equivalent form. The certainty of assessment ensures the exchangeability of the commodities under X.
2) X seeks favorable exchange rates. Whereas value aggregation without money is impossible, X can identify advantageous individual rates.

X anticipates themes related to both merchant capital, which holds a vast commodity inventory, and banking capital, which issues credit money. These themes are discussed in the later parts of "*The Capital*" (vol. 3).

Although we can explore the concrete characteristics of X in detail, such discussions will be reserved for future studies.

4. 6　Obata's (2023) method through chains of simple forms of value

4. 6. 1　New method

Surprisingly, Obata (2023) refutes many aspects of the value-form theory method presented by Obata (2009). Key takeaways include:

A) *The exchange-seeking form is rejected.* Things in the equivalent form are not commodities with concrete use-value, but rather "things" abstractly reshaped by the owners of commodities in the relative form to express the value of their commodity (Obata 2023: 46).

B) *In such abstraction, the equivalent need not be a unique, non-fungible object; a claim to receive a similar fungible object suffices* (*Obata 2023: 47*). To construct the equivalent, using a perceptible object is referred to as "Direct Type," while using a claim to receive a perceptible object is referred to as "Indirect Type."

C) *The expanded form of value is also rejected.* The intrinsic value of a commodity, which is shared by all similar commodities, is not expressed in a variety of things based on the owners' desires. The intrinsic value exists in the market "field," which the value-form theory addresses. The "field" constrains each commodity owner and commodity owners cannot create the "field" (Obata 2023: 48–49). Only after the logical introduction of the 'field' can individual commodity owners express the exchange-seeking form using arbitral equivalents, driven by their desires. Furthermore, if each commodity's value is expressed by all the other commodities in total form of value, each commodity could logically become money, as in Marx's "*The Capital*."

D) *The simple form of value suffices for elucidating the field's structure.* When the equivalent is limited to one, the structure of the market "field" emerges clearly from the interdependence of value expressions, as we will see later.

Under these scenarios, universal equivalents tend to narrow down to a few, but not to one. Here, Obata (2023) identifies three problems: "Direct-Indirect Problem," "Representation Problem," and "Unification Problem."

The Direct-Indirect Problem arises from the two types of equivalent: Direct and Indirect. The universal equivalent can be one of these two types but cannot coexist due to inherent incompatibility.

The Representation problem and the Unification problem are elucidated using Table 2 and Figure 8. Consider commodities numbered 1 through 15. Each commodity has its corresponding equivalent at random:

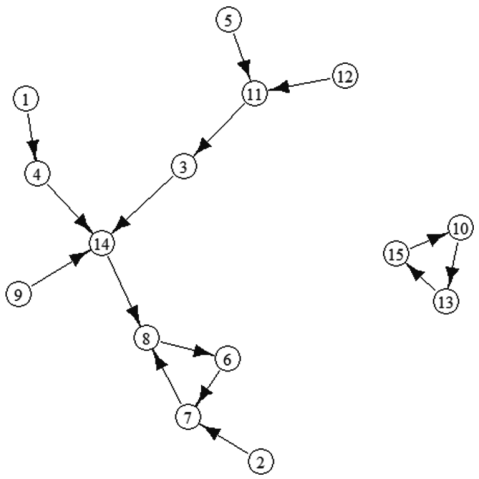
Table 2. Combination of relative form of the value and its equivalent (sample).

Relative form	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Equivalent	4	7	14	14	11	7	8	6	14	13	3	11	15	8	10

Figure 8 shows the correspondence with the arrows as "commodity in relative form of value → equivalent."

On the left side of Figure 8, commodities 1–9, 11, 12, and 14 form a unified system. Following the arrows, they all converge to the cycle of {6, 7, 8}. Such a cycle appears in any combination of relative and equivalent forms, although the cycle may have only a single commodity. The other system is represented by commodities 10, 13, and 15 on the right side

Figure 8. Representation Problem and the Unification Problem.



of Figure 8. Therefore, cycle {6, 7, 8} serves as potential universal equivalents in the left system, whereas cycle {10, 13, 15} serves in the right system.

Figure 8 depicts the Unification problem, which is the problem of unifying the separate systems. If the equivalent of commodity 15 became 11 rather than 10, the systems would merge. Once unified, inertia would enable the value expression system to retain its unity. However, if the equivalent of commodity 3 became 13 rather than 14, the system would split once more.

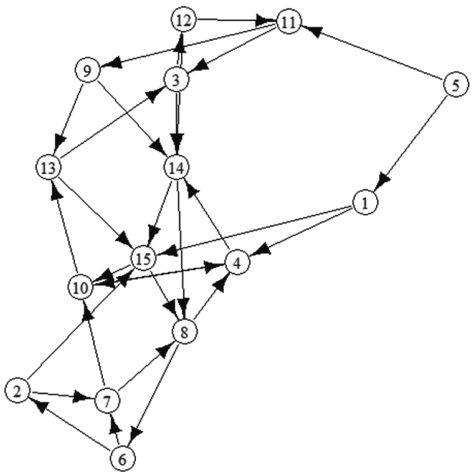
In one system, the Representation Problem involves choosing a single commodity from the cycle components or allowing all of the cycle components to represent the entire system. The former is of the Selective Type, while the latter is of the Inclusive Type.

Obata (2023) rejects the expanded form of value. However, what if the expanded form of value were used? Table 3 and Figure 9 show the combination when a commodity has two equivalents. This is the most basic instance of the expanded form of value.

Table 3. Combination of relative form of value and its equivalents (2 equivalents).

Relative form	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Equivalent 1	4	7	14	14	11	7	8	6	14	13	3	11	15	8	10
Equivalent 2	15	15	12	10	1	2	10	4	13	4	9	14	3	15	8

Figure 9. Representation problem and Unification problem (two equivalents).



In this scenario, whereas the Unification problem becomes easy to resolve, the number of cycles increases. The cycles are {3, 12, 11}, {8, 6, 2, 15}, {4, 14, 15, 8}, {3, 14, 15, 10, 13}, {3, 12, 14, 15, 10, 13}, {3, 14, 8, 6, 2, 15, 10, 13}, etc. These cycles overlap, weakening the value expressions' convergence structure. This disadvantage is similar to Marx's value theory, in which the total form of value results in all commodities becoming universal equivalents. Obata's (2023) rationale for using only the simple form of value appears to be to simplify the intricate relationships among various commodities, emphasizing the significance of money as a focal point of value expressions.

4. 6. 2 Branch structure of money

Table 4 illustrates the polymorphism of money within a single system by logically merging the direct-indirect problem with representative problems.

Table 4. Polymorphism of Money Representative and Direct–Indirect Problem.

		Direct-Indirect Problem	
		Direct Type	Indirect Type
Representative Problem	Selective Type	Material-type Money	
	Inclusive Type		Claim-type Money

The classifications of the direct and indirect types and the selective and inclusive types represent the branch structure of this polymorphism.

From the four potential cells in this branch structure, Obata highlights two predominant forms of money:

1) Material-type money, a combination of direct type and selective type; and

2) Claim-type money, a combination of indirect type and inclusive type.

In addition, Obata (2023) highlights three layers of money. Table 5 summarizes the explanation of these layers, drawing from this publication and his other work.

Table 5. Three layers of money.

The third layer of specialization	Metallic money, Convertible Banknotes, Commercial Bills, auxiliary currency, etc.	Inconvertible Banknotes, Bank Deposits, auxiliary currency, etc.
The second layer of polymorphism	Material money	Credit money or claim-type money
The first layer of the principle	Commodity Money emerges from Commodities	

According to the economic principle, money is derived from commodities; thus, money is necessarily commodity money. Material money emerges when the perceptible object of a particular commodity becomes money. Conversely, credit money or claim-type money emerges when the claim to receive the commodities becomes money. Furthermore, when actually utilized, the two types of money assume various forms as a specialization.

Conclusion

The debate within endogenous money supply theories centers on whether money issuance has roots in the market economy. The problem is whether the bank-issued credit money has a commodity value on its base. This is the criterion that Marxian economists have used to distinguish between the endogeneity and exogeneity of money. Thus, the 2×2 matrix in the supply and generation of money is useful for analyzing various theories of money.

Some endogenous money supply theories shift to an exogenous perspective when considering central bank money. These theories posit that central bank money circulates only due to the legal tender provision. However, the central bank, just like commercial banks, operates as a banking capital: granting credit, purchasing securities, circulating debt as money, and earning profits. Consequently, profits of the central bank show the soundness of assets and the confidence in credit money of the central bank. Thus, bank-issued credit money is based on the commodity's value through the debtors' assets.

Recent Unoist scholars have focused on the commodity theory of money in the value-form theory. This paper introduced the key findings of those studies. Sakura (2019) and Iwata (2022) are essentially attempting to abstractly elucidate the foundation of commodity value in credit money in the value-form theory. Their arguments are based on the abstract compression of the bank structure and commodities. Obata (2009) showed how the

commodity in equivalent form has evolved into a claim. Moreover, Obata (2023) attempts to clarify the focal point of value expressions, as well as the branch structure and polymorphism of money. These efforts and explorations are still ongoing. They will, however, most likely serve as a starting point for future research.

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Notes

1) The Unoist approach posits that equivalents tend to converge to a few universal ones, but unifying them to a singular one necessitates an external intervention force, such as legal tender provisions, due to competition among commodities (Obata 2009: 40). Such provisions are also imperative for material money like gold. In history, both gold and silver served as material money. The choice—be it gold, silver, or both (bimetallism) with a legal ratio—needed legal tender provisions.

2) For example, the mandated goals of Federal Reserve in the US are maximum employment and price stability.

References

Bernanke, Ben. 2013. *The Federal Reserve and the Financial Crisis*. Princeton: Princeton University Press.

Corrigan, Gerald E. 1983. Are banks special? *Federal Reserve Bank of Minneapolis/Annual Report* 1982.

Deutsche Bundesbank. 2017. The role of banks, non-banks and the central bank in the money creation process. *Deutsche Bundesbank Monthly Report*, April 2017.

Glasner, David. 1992. The real-bills doctrine in the light of the law of reflux. *History of Political Economy* 24 (4): 867-894.

Humphrey, Thomas D. 1997. Real-bills doctrine. In *Business Cycles and Depressions: An Encyclopedia*, ed. David Glasner, 555-556. New York: Garland.

Iwata, Yoshihisa. 2021. Even inconvertible money is credit money: Theories of credit money in Japanese Marxian economics from the banknote controversy to modern Uno theories. *Journal of Tokyo Keizai University: Economics* 311. 99-120.

Iwata, Yoshihisa. 2022. A new method of value-form analysis based on a claim on commodity set [in Japanese]. *Political Economy Quarterly* 59 (1): 55-69.

Jakab, Zoltan, and Michael Kumhof. 2015. Banks are not intermediaries of loanable funds — facts,

theory, and evidence. *Bank of England Staff Working Paper No*. 761.

Kanai, Yuichi. 2023. *Can the Central Banks Create Money?, Monetary History of Credit System* [in Japanese]. Nagoya: University of Nagoya Press.

Lapavitsas, Costas. 2017. *Marxist Monetary Theory: Collected papers*. Leiden: Brill.

Marx, Karl. 1996. *Capital: A Critique of Political Economy Volume I, in Marx-Engels Collected Works* (*MECW*) *Volume 35*, New York: International.

McLeay, Michael, Amar Radia, and Ryland Thomas. 2014. Money in the modern economy: An introduction. *Bank of England Quarterly Bulletin* 2014 Q1.

Obata, Michiaki. 2009. *The Principles of Political Economy* [in Japanese]. Tokyo: University of Tokyo Press.

Obata, Michiaki. 2023. The theory of branch structure on money [in Japanese]. *Political Economy Quarterly* 60 (1): 44–55.

Saito, Yoshihiko. 2023. Why did central banks publish papers on the endogeneity of the money supply? [in Japanese]. *Osaka Keidai Ronshu* 74 (1): 1–21.

Sakura Genron Kenkyu Kai. 2019. *Redesigning the Principles of Political Economy* [in Japanese]. Tokyo: Pal Publishing.

Uno, Kozo. 1977. *Principles of Political Economy: Theory of a Purely Capitalist Society*. Brighton. Sussex: Harvester.

Yamaguchi, Shigekatsu. 2000. *Problems in the Theory of The Structure of Finance* [in Japanese]. Tokyo: Ochanomizu Shobo.