Monetary Policy in a Cryptocurrency-Based Economy

Seyed Valiollah Fatemi Ardakani | Aliasghar Ghaeminia


In the name of God

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TOSAN Group

Title : Monetary Policy in a Cryptocurrency-Based Economy

Publisher: Rahe Pardakht

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Chief Editor: Mina Vali

Final revision: Reza Ghorbani

Page layout designer: Alireza Keyvan

Print supervisor: Ghader Shahbazi

Date of publication:

Number of Issues: 1000 copies

ISBN: 978-622-7702-99-6

Phone Number: (+9821) 44443966

Fax: (+9821) 89784902

Email: publisher@way2pay .press

Website: way2pay .press

Lithography: Art of Ashkan

Printing and binding: Vajeh

Address: No. 8, Hadith 2nd Alley, Hadith St., Opposite of Samarkand Passage, West Laleh St., South Janatabad, Tehran, Iran.

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Table Of Contecs

Sponsor introduction

In the fast-paced world of technology, where the competition between technological products for higher well-being and the acquisition of more pleasurable human experiences has reached its peak, "Blockchain" plays a decisive role. Because it has not only helped to increase the security in the registration systems and especially the registration of financial transactions, but it also facilitates and accelerates the space of financial transactions by removing trusted third parties and intermediaries. be Also, due to the use of open source software infrastructure, this technology practically reduces transaction costs. Such a gift can help to generate income, generate assets and develop financial markets for individuals, but it may lead to the limitation of financial and centralized areas. One of the most evolving areas in the field of financial technologies, which is undergoing a new form due to Blockchain, is "money". Money, which was once exchanged in metal form, became paper form with the rise of modern governments and today it can be exchanged privately in the form of cryptocurrencies. Cryptocurrencies have been significantly favored by financial activists and it is feared that they will

be considered a threat to government fiat money in the next few years. This book, while providing an extensive and accurate definition of money, provides an analysis to the monetary policy maker to determine what consequences and determines any government action and approach to the phenomenon of cryptocurrencies will have for the monetary realm and seigniorage. The respected authors of the book, while analyzing the consequences of the government's policy in the space of cryptocurrencies, using game theory modeling in a scientific and precise language, have brought this result to the central bank that any confrontation with the new monetary environment will weaken the government and On the other hand, proper regulation regarding this phenomenon and considering it as a tradable asset or foreign currency will bring better consequences to the government. As one of the leading companies in the field of development of financial and banking technologies, TOSAN Group welcomes and supports the development of thematic literature related to the new financial environment, while inviting other authors and researchers in this field to read this book.

Chapter 1: Generalities

1.1. Problem Statement

Money is one of, if not the most important, human social activity. Long ago, people used various intermediaries for exchange to remove their exchange needs but did not anticipate these intermediaries creating money and organizing special arrangements for communities. Governments once controlled money but did not anticipate it becoming the ruler of power structures.

The research problem stems from this; money's role in the economy has shifted from a passive role to an active one. The current banking system, including central and commercial banks, knowingly prioritizes personal gain using money and existing mechanisms where economic challenges, including Iran's, seem related to this issue.

When Hayek (1976) talked about the "denationalization of money", perhaps few could have imagined such a day when money would be created and exchanged in a decentralized manner without the need for a central bank. But since 2008 and with the help of blockchain technology, the first form of such money was born under the name of Bitcoin, and today money without the support of a powerful government is no longer just a hypothesis.

Once Hayek (1976) spoke of the “denationalization of money”, few could imagine a time when money would be created and exchanged in a decentralized manner independent of the central bank.

However, since 2008, the first form of currency called Bitcoin was born using blockchain technology and nowadays the currency without strong government support isn't just a hypothesis. Cryptocurrencies not only entered directly into real economy transactions but also introduced crypto-assets that affect the creation of all kinds of money. EU's report (2020) shows that over 5,100 crypto assets have been formed, worth $250B, for which there are two reasons:

- significant increase in the number of so-called private "tokens" being issued in the current platforms;
- The emergence of stablecoins and central bank digital currencies (CBDCs).

An important question that comes to mind from the perspective of policymaking is, "Will conventional monetary policy change with the emergence of various cryptocurrencies?"

From a policy-making perspective, an important question has been raised here: "Will conventional monetary policy change as more cryptocurrencies emerge?" This question is important as countries and central banks are increasingly cognizant of the impacts of asset growth, both positive and even negative. As blockchain technology allows anyone or the private sector to issue coins and tokens easily, if these gain popularity for payments, what will happen to current banknotes? Currently, five key policy challenges exist for creating and growing crypto-assets, as identified by Huben and Snyers (2020)

that governments and policymakers have applied to solve them, sometimes without full success.

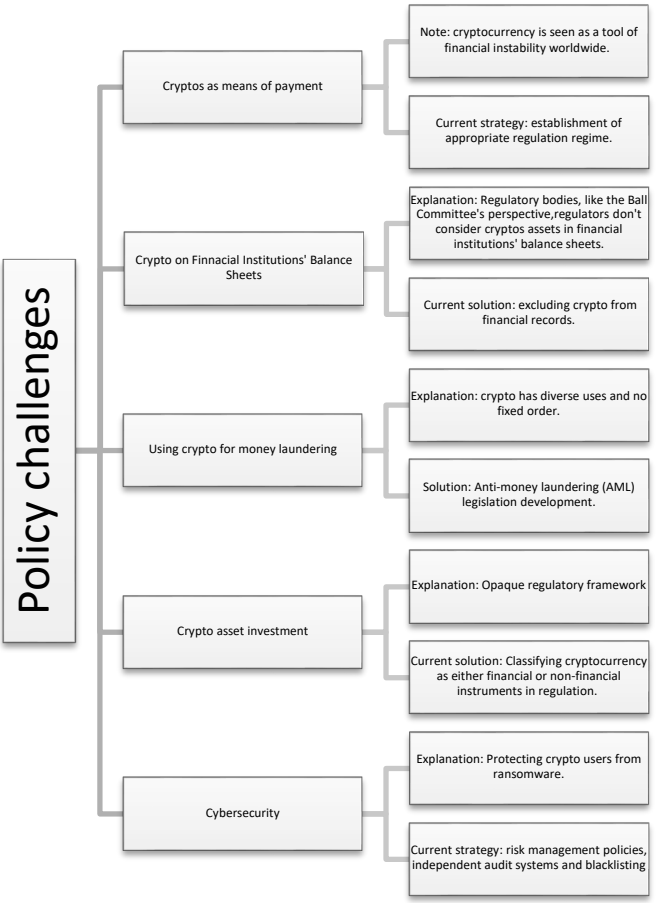


Figure (1-1) Cryptocurrency Policy Challenges

Note: From the perspective of regulatory bodies such as the Securities and

Exchange Commission (SEC), cryptocurrencies are not accepted as assets on the balance sheets of financial institutions.

As shown in the figure, some challenges are associated with economics and others exist in security/auditing issues. The policymaker's focus on regulation highlights a significant gap in economic matters.

Central banks have dominated monetary policy from WWII to the present, controlling the money supply and demand with the push of a button. Today, central banks no longer have exclusive control over monetary governance.

1.2. Methodology

In this study, we will analyze money's nature from a social philosophy viewpoint as attitude towards money impacts research on new currencies and cryptos, shaping future steps. Theoretical basics of money and monetary policy will be reviewed by selecting a monetary school among modern macroeconomics. Then, using math economy, we will model and rewrite Fisher's function based on emerging currencies. Using game theory and evolutionary game theory modelling, we will create a monetary equilibrium model with the central bank and private sector as the main actors in producing

money. The Nash equilibrium will be the determinant of which authority rules manage the monetary policy in the long-term. A policy recommendation will be provided for the central bank and crypto/token activists based on the model's output. Four research phases are illustrated below.

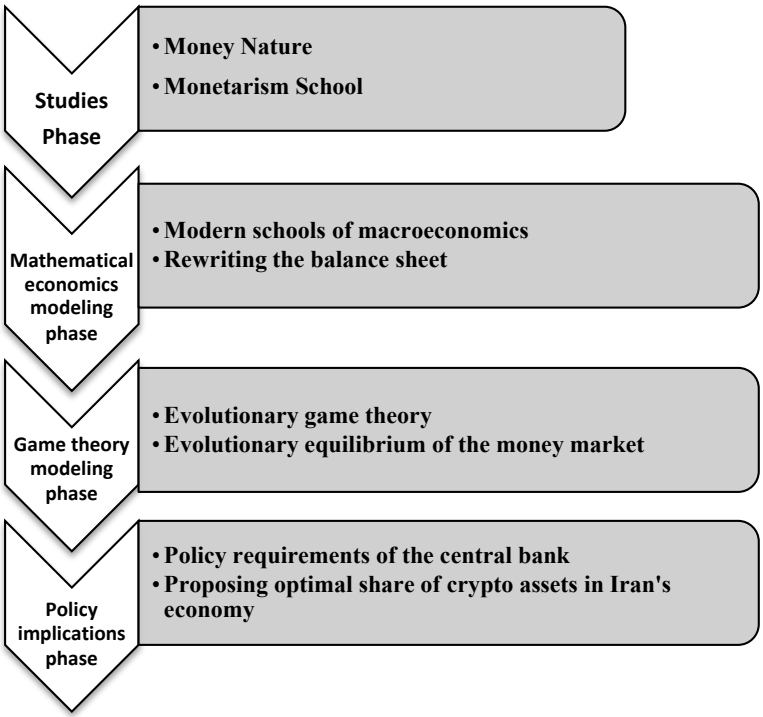


Figure (1-2) Steps of the Research Method

1.3. Research Background

This research has limited literature due to its original nature. Nouri and Nawabpour (2016) proposed a conceptual model for virtual currency policy in Iran, considering its challenging aspects.

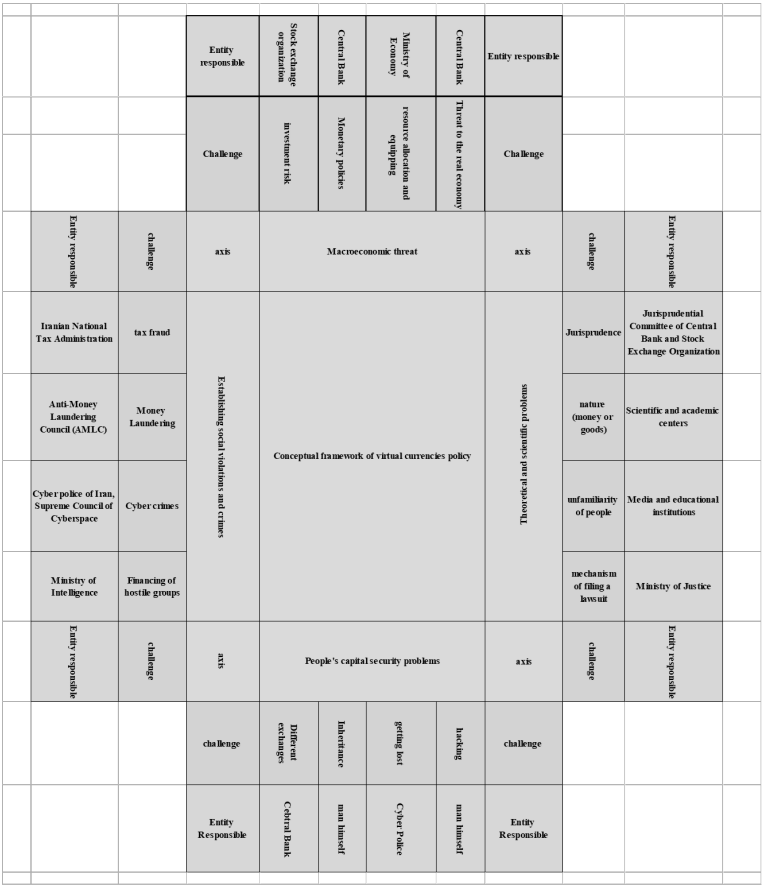


Figure (1-3) Conceptual framework of virtual currencies policy-making in an article written by Nouri and Nawabpour (2016)

According to Kosha and Samavi (2018), cryptocurrencies have posed a challenge for government and monetary policymakers since their emergence in 2009. Bitcoin market value to total cash ratio is as followings: Switzerland - 40%, Hong Kong - 63.5%, Canada - 51.9%. It means that cryptocurrencies can become the dominant currency without policymakers or their effective enforcement control. Bans and restrictions are ineffective solutions, as also shown in this article, central banks should proactively create effective policies with an open approach towards technology. The proposal suggests creating a blockchain governance ecosystem with 7 components (standard networks, knowledge, delivery and support, policy-making, support, guardian and network institutions) using the model of creating a governance ecosystem on the Internet. We need to prioritize the governance of blockchain at three levels: platform monitoring, application monitoring and control, and ecosystem control. Over 10 solutions proposed: sync crypto with AML/CFT, create a sandbox, regulate rules for exchanges/wallets, protect consumers, create monitoring UI (User Interface), and draft theft/fraud laws.

Sapkota and Gravis (2019) examine whether crypto asset market equilibrium exists. It differentiates private and non-private coins. Recently, private coins gaining public attention, as non-private cryptocurrencies like Bitcoin don't satisfy some users' need for

anonymity. By studying the top 10 cryptocurrencies in each submarket from 2016-2018, it was found that private and non-private coins have different market equilibria. Discussing cryptocurrency market returns, their findings show cryptocurrency markets are inefficient. Moreover, private coins' asset market balance is independent of non-private markets. And, it means that privacy coins are emerging as a distinct asset market in crypto.

1.4. Hypothesis and Question

This study has 5 questions and hypotheses that are shown in the table.

Item.	Question	Description	Hypotheses
1	Is money a commodity?	The concept of goods vs. credit	Money is credit.
2	Is crypto (a form of) money?	Is crypto money an exchangeable asset?	Crypto is (a form of) money.
3	What kind of money is cryptocurrency?	Like high-powered money, is it a medium of exchange, or just a store of value like visual or other deposits?	Crypto is similar to high-powered money as a currency.
4	Is the issuer of cryptocurrency exclusive?	Can the asset code be monopolized by the central bank or the government?	Government can regulate some crypto markets, but an issuer is not exclusive.
5	Will cryptocurrency replace traditional currency in the long term?	As technology advances and trust in central banks wanes in the long term, many opt for cryptocurrencies over fiat money.	In the long-term, cryptocurrency will replace the government and central bank as money issuers.

Figure (1-1) Table of Assumptions and Questions

1.5. The Purpose of the Research

This research aims to determine the central bank's policy concerning crypto-assets and currencies and propose the ideal portion of crypto-assets in Iran's economy. It is necessary to consider the balance of monetary authority between the central bank and the private sector that supplies the asset token.

1.6. Policy Implications

This research has two main achievements for policy makers. First, it suggests convincing authorities to weaken commercial banks and financial and credit institutions' money creation and move to a full reserve system. Second, the research concludes that monetary policy in terms of giving dynamic role to money and its creating regardless of real sector is not allowed, implying a need to review monetary policies. This study suggests that opposing private cryptocurrency and treating it as illegal will boost its presence in the money market.

1.7. Research System

This research will examine the theoretical literature of money as credit and explore the monetary theories of social philosophers including Searle, Ingham, and Simmel. And, at the end of Chapter 2, Allameh Tabatabai's credit theory is presented as the sole Islamic

theory on money in social philosophy. Chapter 3 explains the research monetary theory and introduces cryptocurrencies as weak exogenous money. We also indicate that as chartalism ended the monetary metalism era, cryptocurrencies ended monetary chartalism's dominance as well. Chapter 4 introduces the money market basics, assuming cryptocurrencies as a medium of exchange. The chapter considers changes in Fisher's relationship and the money supply function due to CBDC (Central Bank Digital Currency) private and government cryptocurrency, and a rewrite of monetary relations. Balance sheet changes across central banks, commercial banks, and private firms will be shown.

Chapter 5 is all about game theory modelling. This chapter explains money's characteristics using the metaphor of wolves in evolutionary game theory and money is introduced with new features by private publishers. A monetary policy maker can encounter new money in four ways: a) private cryptocurrency as money, B) private cryptocurrency commodity, C) private cryptocurrency currency, or D) finally legally not accepting private cryptocurrency. To improve model accuracy, assumptions are checked using a questionnaire. Research finds central bank's market share fluctuates between 60-80% and the policy maker's view of cryptocurrency affects the private and public sector's share in the money market. Chapter 6 summarizes the research, returns to

assumptions, and presents policy recommendations as the main output.

Chapter 2: Theoretical Literature

2.1. Introduction

This section will discuss credit as money literature. First, We'll present the views of money philosophers, followed by Allameh Tabatabai's credit theory as the main explanation of Islamic money philosophy. In the following, we will determine cryptocurrency's status in metallism/chartalism and exogenous/endogenous dualities while explaining the theory of money.

Credit money backed by government support is frequently discussed in money literature. Despite money being a product of human society, it is considered in all kinds of it as a form of credit and contract in this research. So we are faced with money credit vs. credit money. Money is socially produced, namely, it doesn't naturally produce and is a symbolic mediation of social relationships. So, the concept of money can be regarded as comprising social relationships. All forms of money are the same social relations, contrary to some textbooks' errors in distinguishing between money and credit. (Ingham, 1999).

In the social relationship, most money today exists as credit money, including old commodity money. As Zamil points out, the distinction

between clearing and money is sociological, not logical.

As an example, Clover's well-known rule[1] states that you can buy goods with money, and vice versa, but you cannot purchase goods with money. The exchange of walnuts for apples, for example, should be considered a private transaction based on the "mental" preferences and desires of both parties. In Simmel's view, money plays an important role as well: " the major goal is achieved through the direct interaction between two parties, as well as the relationship each party has … with their economic community; it is achieved when society accepts the money… (that) is just a societal claim" (Simmel, 1978: 177).

As a consequence of this approach, two conclusions are drawn. First, the "real" pure clearing model is only possible in a two-way exchange format and historically can't be an accurate representation of a real economy system of any complexity. In any multilateral exchange of heterogenous goods, money must be considered as a unit of account, no matter how acceptable the signs are. Second, it is impossible to distinguish "money" from "credit,"

[1] The late American economist Robert Clover who presents an innovative theory of money and criticizes the neoclassical tradition for ignoring the history of money in his article "Rethinking the Micro-Fundamentals of Money" (1984: 86) wrote that : " a commodity can be considered money if and only if it can be exchanged for all other commodities. Therefore, a monetary economy doesn't treat all goods as money. It is an economy in which goods can be bought with money and sold for money. There is no need to exchange two goods as part of clearing.

since both are obligations to pay: "Metal money is also an obligation to pay, and... the only difference between it and a check is the number of individuals who confirmed its acceptance. According to sociological acceptance in social groups, monetary exchange differs from clearing (that is, society needs to respect the claim of the holder of money and the trust of the beneficiary of the previous person's claim) (Ibid.: 178). Generally speaking, each type of money has its conditions; however, all of them are fundamentally social and the conventional economic distinction between "money" and "credit" leaves behind this simple but essential fact. Consequently, all forms of money have valid natures since monetary relations are social relations (Siemel, 1999).

2.2. John Searle's Social Reality and the Nature of Money

A very solid foundation can be found for this purpose in the theory of "social reality construction," as one of the competing explanations for the nature of money. Throughout his work, Searle[1] has provided a general explanation of what constitutes social reality. He tries to provide an understanding of human-made realities that emerge in society and collective action; the facts whose consistency and stability are the same.

At first glance, physics, chemistry, and other natural sciences seem to describe the most fundamental properties of the world. Most of our lives aren't based on physical or chemical realities. Searle's

[1] John Rogers Searle

studies focus on how phenomena without physical or chemical nature can arise and survive. All social realities are now included in his 'theory of mind' or 'speech act theory'. Here's an abstract of Searle's social reality explanation in his book "Constructing Social Reality,"[1] which we use to describe money.

2.2.1. Metaphysical Burden of Social Reality

Under the human convention, objective truths have become FACTS in the real world. Indeed, some things exist simply because we believe they do. Money, property, government, and marriage are all examples. However, epistemologically, many of these facts are objective, in the sense that they're not moral preferences and attitudes; like "this paper is money" or "this property is mine". These phenomena may be subjective, but they lead to objective facts[2]. Facts in this world fall into two groups: natural or brute facts that have nothing to do with humans; and social or institutional facts that require human contracts and institutions[3]. To make a fact exist, i.e.

[1]Searle, J. R., & Willis, S. (1995).

[2] Both epistemologically and ontologically, the mental-objective duality applies. Epistemologically, objective and subjective are predicates; it's like saying "Actor A is better than B" (subjective) instead of "Actor A lived in Tehran in 2010" (objective; Feelings and attitudes have nothing to do with it). In the ontological sense, subjective-objective is a predicate of substance, so it's a state of being. In terms of ontology, institutions like money are mental, whereas mountains and plains are objective. In the meantime, objective epistemological statements can be made about subjective ontological entities (and vice versa). This is where the phrase "a piece of paper is a 10,000 Toman bill" comes from.

[3] Although in the strict sense, social realities includes institutional realities that do not require the human institution, due to its insignificance and subtle, the term social

the value of 100,000 Rials of green paper, it is necessary to have a human concept known as "Money".

Natural facts don't need human institutions (only institutions of language to "express" them). Institutional realities are often intertwined with our lives, making it hard to differentiate between social and natural facts. School and money are as natural as nature e.g. mountains and trees.

We create social realities to reach goals and perceive them accordingly. Describing such facts without their function and advantage is challenging. It is the same for money; economists usually focus on money's functions, not its nature, when defining it. For example, Hicks[1] declared “money is what money does.” And, Harris[2] believes that money provides three functions a medium of exchange, a measure of value, and a store of value. Ball[3] also defines money as a type of asset with these three functions. Mishkin[4] defines money as any generally accepted instrument used for payments made for goods and services or repayment of debts.

2.2.2. Main Components of Constructing Social Reality

What's the structure of institutional facts and how would it be possible? To answer this question, we need to introduce three

reality and institutional fact have been used as synonyms.

[1] Hicks, J. R. (1967): P.1

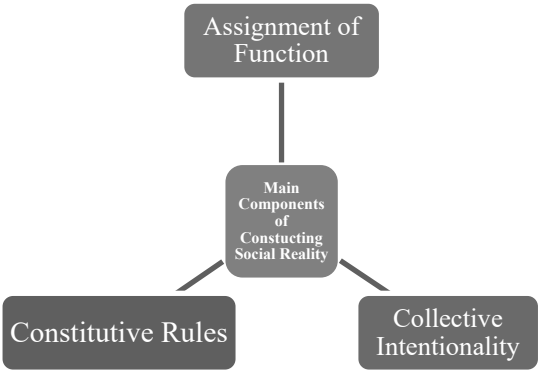
[2] Harris, L. (1981): P.4

[3] Ball M. Laurence, (2011): P.26

[4] Mishkin Frederic S. (2009): P.52

elements: assignment of function, collective intentionality, and constitutive rules.

Figure 2-1: Main Components of Constructing Social Reality



- Assignment of Function

The first property enabling conscious agents to create institutional facts is an assignment of function for phenomena. Humans can impose functions on objects whether natural or specially created objects. Waterways (e.g. seas and rivers) are used for enjoyment or as borders, and all human-made items are creations. Functions are assigned by observers and users, not inherent in phenomena; however, functions overshadow this fact and they seem to be (i.e. phenomena) inherent characteristics. No inherent fact or nature relates to function assignment; functions are completely observer-dependent and user-directed.

When it comes to function, good and bad (value judgment) make sense. If we say that the heart's function is to pump blood, we conclude that it functions well. We need to define the stone's function as a weapon or weighing scale before making a judgment. Functions are closely tied to our goals/values. What the term "have functions" adds to the term "it causes" is a set of values that include goals and ends. For example, as we value life's continuity, we see blood supply in the position of heart function. If we valued death and extinction, so the function of cancer would be accelerating death. Note that "having a function" is not the same as "causing" as the phenomenon may malfunction.

The functions are split into agentive/ non-agentive functions. Agent functions are created by us, not automatic like using money or a stone as weight. The conscious agent has imposed a function on her/his will to fulfil goals. This type of function applies to both man-made objects (money) and natural objects used in a specific way (stone for weighing). In contrast, non-agentive functions exist in nature but aren't imposed on objects; it is our interpretation to perceive natural interaction as a function. The heart function in pumping blood is of this type; a natural event independent of human intentions, which is interpreted as a function due to our idealistic perception valued for sustaining life.

Agentive functions require user intention and attention for continuity and survival, while non-agentive functions continue

effortlessly. Money and screws need constant use to work but the heart and liver function without attention. However, many who benefit from an agent are uninformed about its function. Although, it does not contradict the truth that many who benefit from an agentive function are uninformed about its function.

The function established may have been implemented gradually and unintentionally over time. Functions can be established unconsciously, and become invisible once established. Money may have evolved on its own without planning or thought. However, for every agent function, comprehension is crucial for knowing its purpose or determining its unassignability. At least, some exchange system participants must beware, knowingly or unknowingly, that money buys goods. If functions continue working regardless of human intention, they should be regarded as non-agentive functions. If we believe money has an unintentional and potential role in maintaining power relations in society, so we accept money to function as non-agentive. Like the heart pumping blood, it is a set of unintended causal relationships pursuing a goal. Some authors describe this distinction as "manifest functions vs. latent functions." Non-agentive functions may conflict with the words "assignment" or "establishing".

It is necessary to consider even in non-agentive functions beyond personal control, we face an observer-dependent function which is

goals, objectives, and values governing her thoughts led her to shift from "is caused" to "has function".

- Collective Intentionality

Many species exhibit collective intentionality. This phrase doesn't just imply cooperative behaviour, but to share opinions, desires, and intentions. Intentionality expresses what mental states are about and also their dependents (for example, belief/hope necessarily requires belief/hope toward something; it can't exist in isolation). Collective intentionality exceeds single collective intentionality. A clear example is when “I” am doing something that is only part of what “we” are doing it. Imagine a soccer player in a team or a violinist in an orchestra.

Collective intentionality is necessary for many human interactions. A boxing match needs collective intentionality for two individuals. Note the difference between a boxing match and a street fight. Fighting individuals don’t seek collective intentionality. A thought available on both boxers' minds during a boxing match is their intentions in acting collectively. The main element of collective intentionality is to comprehend and understand to do something together. The phrase"we intend" seems to sit in each mind.

“We refer to social reality as any reality including collective intentionality”. Two people walking in a park is a social reality (both of them know that they are doing this action together). A special class of social realities is called institutional facts including collective

behavior involving institutions. The fact that “this green paper is a 10,000 Toman bill” is an institutional fact that requires an institution called money unlike two people walking in the park.

- Constitutive Rules

The third component of institutional reality is constitutive or establishing rules. Institutional realities exist only within the regulative framework of these rules. It is a system of rules that makes institutional realities possible. To grasp regulative rules, distinguish them from regulative rules with examples. The function of some rules is to regulate pre-existing activities. For example, the rules of “driving on the right” or “ limitation of the goalkeeper to hold the ball for more than 3 seconds” is supposed to regulate driving and soccer games; driving and football have existed and will exist with or without this rule. Some rules create the possibility of the activity, not just regulate it. For example, chess rules don't regulate pre-existing activity; it was not the case that people moved wood pieces on a board and now rules must be established. Chess rules allowed for chess to be played and chess is nothing but the same rules. So, if we don’t follow the rules, we aren’t playing chess.

2.2.3. Creating Institutional Reality

Combining two concepts of “assignment of function” and “collective intentionality” creates “collective function assignment”. Assigning the function is the mind intentionality aspect and the intentionality aspect has both collective and individual aspects; therefore,

assigning function can be also collective. Creating institutional reality involves “assigning collective function within the framework of a set of constitutive rules. These facts can be formulated in the following format:

“X considers as Y”; or “X considers as Y in context C”.

In the above-mentioned formula, a collective rule was established based on general agent intentionality in which Function Y is assigned to Object X. For example, imagine a tribe with wooden fencing (X) as a border (Y) around. “To be a border” is a function that is collectively assigned to that fence and its consistency relies on society's collective credit which creates facts such as “the exit of residents from the border requires a permit” or a piece of paper (X) is considered 10,000 Toman value-money (Y) in Iran. In such cases, we should distinguish between Accredited status and assigned function. Accredited status equals institution, like border and money in the above-mentioned examples.

An institution consists of constitutive rules, each of which is a part of that phenomenon and together makes an institution. However, institutional realities arise post-establishment; e.g. “Border entry permits required” or “it is 10,000 Toman bill” are institutional realities.

The second form of institutional reality is such that Y be self-consistent. The formulation of the previous statement, “X is regarded as Y in context C”, is the most common form of

institutional reality, but there are also cases of institutional realities that do not follow this formula.

Y itself is self-consistent in a set of established functions that can be realized without reference to natural reality (X). Examples of such functions include “debt” or “company”. The formal structure of the realized form of institutional reality is as follows:

“The state of affairs in question is considered as Y”.

The basis of institutional reality is to provide the constitutive rules that are collectively assigned to fulfil a function. Institutions are created to fulfil a function. Now, self-consistent Y terms demonstrate the fact more effectively that institutions are created to fulfil a function where such a role has been realized without any physical element (X)[1].

2.2.4. Adaptation to money

Searle's view on institutions has aided in explaining money's nature. Money description relying on this theory is as follows:

“Money is subjective ontologically and objective epistemologically. Its subjectivity means that users' collective intentionality-perception makes that thing money, not its inherent facts. Money exists due to people's collective belief in its existence. Its epistemic objectivity is due to this that once established, people's knowledge

[1] Jan Mohammadi, Mohammad Taqi and Abdullahi, Mohammad Ali (2010), “John Searle's Institutional Realities”, Metaphysics, second year, No. 5 and 6, 1-22.

that paper is money does not result from their beliefs, attitudes or values. Physical money such as coins and bills follow the “X is considered as Y” formula. A coin or paper with special coordinates carries a specific value.

However, it is not the case with most money today which is the number of money deposited. Number money is just a debt representation with value in numbers, with no physical element. “Money follows the Y formula, where a specific situation is deemed as Y”. This money follows the self-consistent Y formula, which means “the numerical representation of the bank’s commitment to the depositor is considered as money”.

Searle's theory on social reality and its relevance to money is summarized in the following paragraphs:

1. Our idea of a social phenomenon is part of it: “To use my pocket content as money, it must be recognized as such. Losing belief in money stops its functionality, and ultimately, its value” [1]. Searle thinks when the object influences behaviours, we don't need the word “money” in its definition. It is sufficient to believe identities are exchange mediums, sources of value, and debt payment against services[2].

[1] Searl. 1995, p.32.

[2] Ibid, p.52.

2. Inherently, there is no social reality without natural reality. Money must be physical (paper, metal, etc.). Its physical state doesn't matter; however, there must be a physical form anyway[1].

3. Social reality is systematically interconnected with other events. For example, money needs an exchange system for goods and services to exist and an ownership system is necessary for commodity exchange[2].

4. Social identities are formed by social functions. An object or a social identity enables continued social action. For example, a $20 bill is a fixed payment option to pay against something; i.e. during a social function, money's identity evolves. During a process, an object gets a noun phrase (label) and money emerges; although, this noun phrase i.e. money makes us forget to understand the process, process precedes product[3].

2.3. Simmel's Philosophy of Money[4]

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[1] Ibid, p.34.

[2] Ibid, p.35.

[3] Ibid, p.57

[4] Simmel's studies on money, esp. his book "Philosophy of Money", by going beyond describing money's nature., seeks to explain the modern economy and society construction, shown by money's existence. In fact, Simmel explained money's role in shaping today's socio-economic landscape and its socio-methodological implications

Unfortunately, Sociologists have taken Simmel's statement as a misleading word that "The Philosophy of Money" is not really about money, but rather about how money expresses the essence of modern life[1]. The modern spirit of discontinuous, fragmented, increasingly abstract impersonal relations finds its perfect expression in money. The more the life of society becomes dominated by monetary relationships, the more the relativistic character of existence finds its expressions in conscious life[2]. This form of 'sociation" generates individual, personal freedom and intellectualism[3]. However, in addition to the analysis of the effects of money, Simmels's "The philosophy of Money" contains important, but fragmented, accounts of money's nature- its origins, its essential qualities and how these are produced. Two aspects of The Philosophy of Money have received less attention than they deserve: the money analysis as an abstract value, and as a form of sociation in itself – that is to say- as constituted by social relations.

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and disregards money's ontology. However, Ingham, in his book "The Nature of Money", has reviewed Simmel's view on moneythrough detailed search in Simmel's works to find his references regarding money's existence. It seems that Simmel's view on money is best explained in Ingham's book "The Nature of Money" and Ingam's work is the best description of this matter. So, our basis in this section is the translation of some parts of Ingham's book, discussing Simmel's monetary philosophy.

[1] Dodd, 1994: 175.

[2] Simmel, 1978 [1907]: 512.

[3] Dodd, 199.

Simmels rejects all economic theory, including Marxian theory, which locates money's value in the specific substance or content of the money- stuff. The value of money does not derive from the costs of its production, supply and demand, or labour value. Rather, money is the representative of abstract value[1]; it is 'the value of things without the things themselves'[2]. Money is the 'distilled exchangeability of objects; the relation between things; a relation that persists despite the changes in the things themselves'[3]. Simmel's critique of commodity theories of money is developed with a dismissal of their argument that measures must have the same quality as the object to be measured (for example, measures of length are long, and therefore a measure of value must be valuable[4])[5]. Some measures of length are long; but, as Simmel argued, this is because measured objects share the same quantity of length. ' To establish a proportion between two quantities, not by direct comparison, but in terms of the fact that each of them relates to a third quantity and that these relations are equal or unequal is

[1] Simmel, 1978 [1907]: 120

[2] Ibid, p. 121.

[3] Ibid, p. 124.

[4] The flaw od this argument is neglecting the point that length and weight are objective categories (length and weight) when measured but regarding object value, we face the mental category of "value" measured by the mental concept of money of account.So, valuing measurement criteria is totally inapplicable and caused by money confusion as unit of calculation (main concept of money) and money stuff.

[5] Ibid, p. 131.

one of society's great accomplishments [1]. Thus, following the nominalists of the Historical School, Simmel asserts the logical primacy of the abstraction of money of account (money as a unit of value). Money is 'one of those normative ideas that obey the norms that they represent' (money is 'self-referential')[2].

Writing at the apogee of the gold standard, Simmel conceded that 'money performs its services best when it is not simply money, that is when it does not merely represent the value of things in pure abstraction' [3]. But he does not lose sight of his essential and prescient point. 'It is not technically feasible', Simmel continues,' to accomplish what is technically correct, namely to transform the money function into pure token money, and to detach it completely from every substantial value that limits the quantity of money, even though the actual development of money suggests that this will be the outcome'[4]. Indeed, with the breaking of the link between gold and the dollar in 1971, commodity- money ceased to exist as even a standard of value.

In contrast to orthodox economists, Simmel understands that exchange by money is structurally different from barter, in that it is constituted by the social relation of credit. Money is a form of

[1] Ibid, p. 146.
[2] Simmel, 1978 [1907]
[3] Ibid, p. 165.
[4] Ibid, p. 165.

sociation, and not a 'thing'; 'money is only a claim upon society'[1]. Indeed, 'metallic money, which is usually regarded as the absolute opposite of credit money, contains, in fact, two presuppositions of credit which are particularly intertwined[2]. First, the metallic substance cannot normally be tested in cash transactions and is rather, verified by the secondary characteristics stamped on coins by the issuing authority. Second, people must 'trust' that the tokens of value will retain their value. This maybe based on objective probabilities, but this 'kind of trust is only a weak form of inductive knowledge'[3]. There can never be sufficient information for it to be the only basis for holding money. Additionally, money requires an element of 'supra-theoretical belief or 'social-psychological quasi-religious faith'[4]. 'Money is the purest reification of means, a concrete instrument which is identical with its abstract concept; it is a pure instrument'[5]. The qualities of this pure abstract value reside in 'social organization and … supra-subjective norms'[6]. Modern sociology's exclusive emphasis on trust tends to trivialize Simmel's analysis. Like Weber, he saw that the development of the modern state and non-metallic, dematerialized money were intimately connected. Modern states were built, in large part, based on

[1] Ibid, p. 177.
[2] Ibid, p. 178.
[3] Ibid, p. 179.
[4] Ibid, p ,179.
[5] Ibid, p. 184.
[6] Ibid, p. 211.

credible metallic standards and coinage. Money led to the dissolution of the personalized bonds of feudal relations, and the 'enforcement of money transactions meant an extension of royal power into areas in which private and personal modes of exchange had existed'[1]. However, in a dialectical process, the 'value of money is based on a guarantee represented by the central political power, which eventually replaces the significance of the metal'[2]. In this historical process, coercion, as always, preceded any 'trust' in the establishment of a currency.

However, having rejected essentialist theories of intrinsic precious metallic value and the classical labour theory of value, Simmel is left with the very same problem that the marginalist and Austrian subjectivist economic theorists had to face - how can myriad individual preferences produce a scale of inter-subjective value? 'Money as abstract value expresses nothing but the relativity of things that constitute value'[3]; but, at the same time, it transcends the relativity of exchangeable values and 'as the stable pole, contrasts with the eternal movements, fluctuations of the objects with all others'[4]. But how does it do it?

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[1] Ibid, p. 210.
[2] Ibid, p. 185.
[3] Ibid, p. 121.
[4] Ibid, p. 121.

Simmel answers the question with a historical analysis of money's transformation from substance to pure abstraction (chapter 2, section III). His analysis is full of insights gleaned from the Historical School but is no more than a 'description' of the process of becoming the non-material abstraction he correctly identified as money. Moreover, his analysis is confused; for example, he failed to see that if all money is credit, then Hildebrand's evolutionary scheme from 'barter to commodity-money and then to credit' is contradictory.

Two fundamental questions remained unanswered in 'The Philosophy of Money'. First, what are the origins of the concept of money as value? Simmel agrees with the Austrian economists that money expresses exchangeability, but sees that it cannot have been the 'result of the process of exchange'. Rather, 'money can have developed only out of previously existing values'[1]. But what might these have been? Simmel left no more than scattered clues. Second, how is the abstract value of modern dematerialized money established and maintained? Precions metal is a means of maintaining confidence, but in an 'ideal world' money would be no more than 'its essential function', as a symbol of abstract value. Simmel reverts to a thoroughly positivist economic conception of money. 'Money would then reach a neutral position which would be as little affected by the fluctuations in commodities

[1] Ibid, p. 119.

as is the yardstick by the different lengths that it measures'[1]. In other words, Simmel accepts the economists 'ideal world' in which the value of commodities is the result of the interplay of subjective preferences, mediated by the 'neutral symbol of money'. But, this 'ideal world' is not explained; it does not have a social structure.

2.4. Ingham and The Nature of Money

Jeffrey Ingham is a retired British economic sociologist, formerly a professor at Cambridge University. He authored two well-known books: "The Nature of Money" (2004) and "Capitalism" (2008), which focus on the monetary system's role in constructing the capitalist economy. He aims to build an analytical rival structure in money analysis by challenging the main monetary analysis principles in current orthodoxy. His monetary analysis is to go beyond the economy and examines money from sociological, historical, and economic perspectives, as well. Here, there is an abstract of the content of the book "The Nature of Money". The main framework and the best narrative of Ingham's monetary philosophy is its contrast with the monetary ideas of conventional economic theory; common ideas such as the interpretation of money as an 'economic phenomenon' and 'spontaneous product of the market', focusing on the main function of money as 'medium of exchange', and 'neutrality of money' in long-term or its insignificance for real sector

[1] Ibid, 191.

changes. Ingham challenges fundamental principles using theoretical arguments and practical-historical references.

Ingham's monetary philosophy embodies all four themes of monetary dissent traditions as follows: ‘money is an abstract measure of value’; ‘money includes a claim or credit’; ‘ it is the government or authority which is considered the basis for money formation and stability’; and ‘money is not neutral in the economic process’.

Ingham emphasizes the ‘social nature of money’ in his monetary philosophy. From his perspective, money is a ‘social relation’ based on a debtor-creditor relationship. Money as a valid instrument can be used as debt by creditors. Debt stems from social-institutional structures beyond goods’ production and exchange. The money owner is a goods creditor. While money is an issuer demand (government or bank), in a more general and important sense, it is a demand from society's productions. What gives value to this phenomenon is not the economic mechanism, but the social infrastructure that originates from the publisher's ‘power’ to define debtor-creditor relation.

2.4.1. Money and the Government's Role

Ingham stresses the government's vital role in money creation and survival. Using various theoretical arguments and historical evidence, he argues that money is created by society and government, not the spontaneous production of the market.

Money's origin from the barter and markets centre is a non-historical tale of comparison and fantasy. Promises to pay are abstract things whose market operation is nothing but removing doubt about their value 'from the free market process'. Money is a result of the 'depersonalization of a debt' realized with the help of law and power.

One of the main points of modern money theory present in Ingham's statement is that creating money is linked to the issuer's debt-making ability and can be settled with the same money. Money must settle any debt incurred by the issuer. In other words, an issuer's power is to assign a debt obligation to others which gives him power to publish money. Besides accepting debt documents for settlement (debt to bank/tax), he believes government and bank money is valid because they involve significant portions of the economy in payment and settlement. As per Ingham, it is not clear how much 'tax collection and Force Majeure influence the acceptance of money. A historical example he gives is when colonists in a colonial region taxed labour rather than enslaving it; taxes that can only be settled with their own published money. To pay taxes, the workforce needs the colonizer's money and becomes subordinate (linking taxation power to money establishment). In a sense, this is the same as having a slave labour force working for the colonizer.

Then, Money is a social phenomenon (not an economic one) and cannot be interpreted as a 'real' economic concept that values the

phenomena in exchange rates (object-object relations) and arises from scarcity and preferences of those who maximize utility (agent-object relations). In conventional neoclassical economics, the creation and survival of money is completely incompatible with the 'social relationship' of debt (agent-agent relations).

2.4.2. Distinguishing the Value/Value of Money

According to Ingham (following Knapp), there is a fine distinction between the value (purchase power) of money and its validity. The value (purchasing power) of money, as an economic subject, is dependent on the establishment of a monetary institution based on social infrastructure.

The concept of the value of money in goods differs from questioning why an inherently worthless object is accepted as valuable (acceptance). The latter is a product of a society based on power and authority, not a product of the market. Ingham doesn't believe only the government creates money. He notices and observes private money; however, authority support and satisfaction are crucial for private actors to create money. Banks' systematic connection with the government symbolizes their private money creation.

2.4.3. Distinguishing the Essence of Money from the Form of Money

Another fine aspect of Ingham's analysis is distinguishing "money concept" from "money form". He seeks money's meaning behind material forms. Money is an abstract substance loaded onto metal

(i.e. coin), paper (i.e. banknote), or electronic bits (i.e. electronic money) due to social relations. However, money exists as an abstract concept called 'value counter' ('money of account' or money as a unit of calculation) and still performs its functions. Ingham sees money as primarily 'money of account' per Keynes; i.e. a social capacity to measure the value of goods and debts. Money was created by human/government efforts to value social obligations (e.g. blood money, taxes), rather than just for spontaneous market exchange. Several cases reported in communities where money without physical and objective form, records its function through debits and credits among traders. Money cannot be a creation of the market for stable calculations, rather, it's the market that can grow once infrastructure is built.

2.4.4. Old Coins as a Form of Debt Instrument,

Ingham in a radical analysis argued that today's paper and electronic money do not have a substantial difference from past metallic currencies. In premodern economies, commonly used currencies had been nothing but a debt instrument that was accepted under the authority of power. Despite having a lower monetary value (purchasing power) than their expensive metal inventory, these coins possessed a distinct currency status for users that went beyond their material worth in gold or silver, however, for users, the concept of their being money was completely distinct from their being made of gold or silver. Old metallic currency and

modern credit money are both forms of debt instruments that derive their value (acceptability) through established social relationships, rather than being a product of a physical form of money. Metal, paper, and computer bits are three mediums for the conceptual-credit nature of money, while the precise concept of money has nothing to do with these physical mediums.

2.4.5. Money Importance in the Economy

The mainstream economic perspective, which limits the role of money to being a "facilitator" of transactions and a means to reduce frictions in market exchanges, has been challenged. Ingham is unsettled by the mainstream economic perspective, which restrains the role of money to be a ‘lubricant’ of transactions and a factor in reducing frictions in market exchanges. In his view, conventional economics has debased this important phenomenon with such an interpretation of money. Firstly, the lubricant role of money necessitates the stabilization and establishment of the priori of money as a social institution and secondly, the function of money goes far beyond that. If money is a cost-reducing exchange intermediary in the market, this is but an efficient barter. Money is not a marginal force revolving around tangible fundamental factors; it is an independent fundamental force. In contrast to the mainstream interpretation, Ingham implicitly praises the potential for money creation and considers it the reason for the emergence of modern economies. Concepts such as ‘neutrality of money’ or

‘long-term equilibrium as the normal state of affairs do not reflect the reality of the role of money in the economy. The money establishment and its expansion hold significant importance for the ‘real’ economic outcomes. The economic downfall of some countries resulted from the malfunctioning of the monetary system (e.g. Argentina and Japan) which demonstrates how the monetary system plays a ‘real’ role in the economic function.

2.4.6. Money Creation as a Means of Capital Differentiation

Ingham describes the distinctive feature of capital ownership as ‘flexible credit money creation’. He believes, along with Schumpeter, that the distinguishing feature of capitalism is the ability to ‘create money independently of previous savings and real accumulation’. His term ‘credit money creation in capitalism’ is used to clarify the current monetary system, which is an organized arrangement between the government and private banks. This framework enables private entities to convert their debt into ‘money’ through a specific procedure. During this process, bank-created money, which is essentially generated under institutional debt obligations, is elevated to the status of "public money" through an institutional exchange. This structure represents the ‘institutional core of modern capitalism’. Capitalism differs from earlier economic systems since the emergence of this type of monetary system. The transfer of banks' debt as private agents to

public money and their ability to create debt is unprecedented in the pre-capitalist world.

2.4.7. Money Creation Threats

Ingham wants to shift focus from seeing money as a tool to emphasizing its developmental and distributive impacts. It is another non-neutral aspect of money. In other words, the non-neutrality of money has pros and cons. The money creation provides a basis for equipping the economy with a new institutional possibility for real expansion and development. However, this is not the whole story and this capacity is highly susceptible to malfunctioning.

His focus on the current monetary system's malfunctioning is concerned with the instability and inequality resulting, which is an outcome of the power struggle. He is interested in a sociological understanding of credibility and is inclined towards class analysis. He's interested in sociological credibility and class analysis. Monetary changes, including money creation, resulted in power struggles among different groups and conflicting interests in society. The relationships between wages, employment levels, interest rates, and exchange rates are all impacted by power struggles, making power a determining 'real' factor in the economic realm. Not only he has criticized conventional macroeconomics, but also faulted alternative approaches for neglecting this reality. The

primary outputs of the economy are not simply the products of natural necessities and real factors but rather stem from power relations. The primary economic outputs result from power relations, not just simply natural necessities and real factors. This is precisely where social economics replaces naturalistic and non-sociological viewpoints. The malfunction potential in the monetary system in terms of inequality arises from money's ties to certain social relations inherently based on inequality and power. The current monetary-banking system's rules and regulations create and reproduce inequalities.

Another aspect of the malfunction is the recurrence of economic ups and downs and cyclical instability. According to Minsky, capitalism is a system that cannot 'stay put'; it is inherently incapable of reaching a permanent equilibrium situation and maintaining it. The conventional assumption of 'natural order' and 'natural state' in this context is highly ambiguous. The capitalism recurring pattern, economic recession, and decline due to the collapse of a speculative 'bubble' fueled by inflationary speculation of the previous era; the bubbles are typically financed by bank credit. Bank credits are the creation of new money, rather than a reallocation of existing money. Expectation-driven dynamics in financial markets create the potential of raising asset price bubbles. The collapse of speculative asset prices (e.g. securities, real estate, and so on) makes it difficult to repay debt service without selling

those assets, and the increasing tendency to sell assets to repay debt drives prices down again. The falling prices may spill over into other sectors, slowing down economic activity as expenditures and investment decline during this period. Therefore, permanent cycles of boom and bust occur in a capitalist economy. This is a characteristic of contemporary capitalism and labelling them as 'temporary deviations from the natural long-term growth path' is nothing but the orthodox economists'mindset.

2.4.8. 'Hard Money-Soft Money' Dichotomy

Using the framework of class analysis, Ingham describes the historical trend of power struggle among the main classes of capitalism. The conflict over the 'hard money-soft money' dichotomy stems from two opposing tendencies in the monetary system, the former emphasizing 'stability' and the latter emphasizing 'development'. This debate on capitalism persists since its inception. Today's debate between financial and industrial capitalists centres on hard vs. soft money; the former favours 'hard money' and high-interest rates while the latter prefers 'soft money' and cheap currency. Ingham perceives capitalism's main conflict not as the struggle between capitalists and labourers, as Marx believed, but rather as the competition between two classes of capitalists: financial capitalists (the creditor class) on one side, and consumers and capitalists involved in production and business (the debtor class) on the other. While he is biased towards the debtor class of

productive capitalists, it is essential to preserve creditors' interests for the balance of power. In his view, the subjugation of either of these two classes could initiate a trend towards instability and jeopardize the necessary balance of power for a sustainable monetary system.

2.4.9. Virtual Money from Ingham Perspective

Ingham was interested in virtual currencies even in 2003. (the time of publication of his book). Before Bitcoin's recognition as the primary cryptocurrency, he spoke of decentralized currencies based on information technology and local currencies which have brought liberals and socialists together in a contradictory manner on decentralizing money. Virtual decentralized currencies are favoured by liberals who value ‘market money’ and ‘non-governmental money’. However, in practice, socialist network currencies aiming to establish local and regional currencies with egalitarian objectives align with the same liberal inclination. With a far-sighted view, in 2003, he predicted that the internet platform would lead to these phenomena.

Ingham is pessimistic about these developments. He's pessimistic because he believes in money’s social roots and its reliance on the impersonal trust created by power authority. Furthermore, he believes in the link between money and taxation reflects his attitude, as the ultimate power authority with the ability to levy

taxes can determine which money is accepted as a favoured tool for discharging tax debts, thereby establishing the desired money's acceptance in the economy. He considers internet-based currencies as ‘rootless’ and ‘self-reliant’ and is hesitant to consider their growth potential. It is evident that it conflicts with his monetary philosophy, which deals with money's social construction and institutional power. This does not necessarily mean his opposition to the possibility of survival and acceptance of such currencies in a limited network of actors, but creating extensive monetary environments needs social and political relationships independent and beyond any network of monetary transactions.

However, it seems that blockchain and smart contracts with novel potentials, which were unknown potentials at the time of writing Ingham's book, have made his definitive judgment on this matter difficult. The key feature of this technology addresses Ingham's central concern, which is its ability to create an incorruptible and tamper-proof trust ‘without a third-party intermediary (power authority) on a large scale’. Today, non-personal trust among strangers is obtained through the government and the power authority. This is evident in today's money, where traders rely on a trusted third-party debt for exchange without mutual trust or knowledge. This trust is not based on the traders' debt instruments, nor does it cover a limited range of users. Money due to the power authority credibility, has eliminated risk for all unknown traders.

However, new technological advances (e.g. blockchain technology and smart contracts) allow the trust to rely solely on technology, not people. The trust created here is only due to the parties' confidence in the inability of any human actor to manipulate the rules that have been established based on the technology at the beginning of the interaction. In other words, this technology may solve the trust issues among traders, this time by referring to internet-based and tamper-proof technology, not by playing the role of the power authority as it does today. In this regard, highlighting the role of state taxation as a lever for creating demand and acceptance for government-supported money may ultimately justify government-backed money (or government-supported currencies) or maintain its demand and usage, instead of excluding other reliable currencies like cryptocurrencies. In other words, the power to create a trust can rely on technology and the establishment of trust and exertion (taxation) by the government, making a multi-currency system with cryptocurrencies and government-backed currencies.

2.5. Explaining Money Credibility

The social reality in Islamic philosophy has been discussed as ‘credit perceptions’. According to the late Allameh Tabataba'i (1988:161), the act of crediting is defined as ‘attributing one thing to another using sensory factors to establish a related sequence of emotional effects’. Credit perceptions shape human credibility. Credit perceptions are ‘assumptions created by the mind to fulfil needs,

with conventional, contractual, hypothetical, and credit aspects which have nothing to do with reality and the essence of the thing (Ibid, p. 138). We credit paper as currency. People give banknotes value as credit and use them to meet their real needs. Currency type doesn't affect this credit and is not related to money's inherent value. Money, before being exchanged for goods and services, gains purchasing power from being valued by humans for goods and services, which meet their actual needs, regardless of whether it is intrinsically valuable or not.

According to the late Allameh Tabatabai, even though credit and imaginary notions are not real, they still have real consequences. Therefore, if we assume that one of these imaginary meanings has no external effect (compatible with its causes and factors), it would not be of this type and would be a real mistake or a real lie (invalid and ineffective). Therefore, these meanings will never be invalidated. (Tabatabai, 2008: 115-116). In fact, according to Allameh Tabatabai, credit perceptions are considered affirmations that can be true or false. A credit is true if it aligns with goals and purposes and can lead us to the desired outcomes, it is considered true and correct; otherwise, it is false. ‘True’ and ‘false’ do not mean conformity with reality, but rather ‘cancellation and ‘non-cancellation’ (Mottahari, quoted from Pourhasan, 2013: 50) Therefore, it is possible to assume that ‘When money loses its intended purpose and becomes credit, it loses its value’.

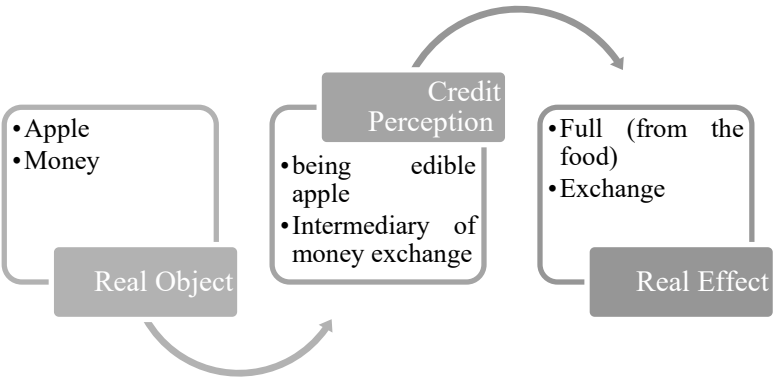
Shahid Motahhari explains his belief on the concept of cancellation that ‘in credit matters, there is always a hypothetical and contractual relationship between two parties, and the creditor assumes this hypothesis and credit to achieve his/her goal, benefit, or purpose, and any action that better serves his/her intended goal and benefit is considered credible’. The only rational measure used in credit affairs is the cancellation or non-cancellation of credit, so, the characteristics of the creditor should be considered; for instance, if credit is a hypothetical and illusory credit, its benefits and if the credit is a rational credit, its benefits and objectives should be considered. There is also a distinction between the legal credits of a human being and the legal credits that are determined through ‘Divine Revelation’.

However, there is no difference between anyone or anything that considers something as credit, as each individual, thing, or group has an objective and purpose in their credit and considers achieving that goal as the destination. If something is credited for a specific purpose, it is unlikely that the same creditor would consider something else that would hinder them from achieving that goal. Therefore, the only measure of intellectual progression in credit affairs is the measure of validity or invalidity of credit. (Motahhari, 2001, p. 402).

The late Allamah Tabataba'i defined the act of ‘crediting’ as follows: ‘To attribute a limit of something to another thing with sensory

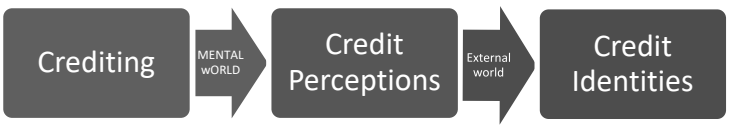
factors to order the effects that are related to our emotional factors.' (Tabatabai, 1367: 161). The principle that governs the relationship between a real object and its real effect is the principle of credibility. For instance, 'apple' is a real object, and 'being edible' is a credible and real effect, while the pleasure or satisfaction that arises from eating the apple is considered a real effect. (Oliayi, 2010: 98). Regarding money, it can be stated that it, as a physical object - whether metal or paper - is a real object, while its function as a medium of exchange is considered a credible and real effect that facilitates exchange and trade. Prior to its use in exchange for goods and services, money is given credibility by humans because it serves as a means of satisfying real human needs through the equivalent value of its nominal worth. Therefore, the value of money is based on the credibility assigned to it by humans.

Figure (2-2) What is Credit and its Role in Life



In the human mind, credits manifest as credit perceptions. Credit perceptions are assumptions that the mind creates for vital needs, and they have a hypothetical, situational, and contractual aspect and do not necessarily correspond to reality or actuality." (Tabataba'i, 1988: 138). Credit perceptions create credit identities in the world of credit. These credit identities are not entirely separate from external reality but they do not exist externally. For example, in the external world, there is no such thing as 'money' in an external sense, but this credit identity is created due to its connection to a material object that is either a piece of paper or a particular metal. (Olyaee, 2010: 99).

Figure (2-3) The Process of Creating Credit Identities



Credit is vital but often overlooked in human life due to its extensive and prominent role. Allamah Tabatabai likened a person without credit to a fish without water(Tabatabai, 1992: 47) and credit

creation shapes human individual and social Like water for fish, credit is essential for human progress and no intentional action can occur without its identity (Tabatabai, 1988: 181).

2.5.1. Credit Perceptions vs. Real Perceptions

Credit perceptions are defined in contrast to real perceptions, and comparing both of them helps understand the idea better. In explaining these differences, Ayatollah Morteza Motahhari (2001: 371) summarizes valuable points in the following table.

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This book presents an analysis of the monetary policy environment within the context of the entry and emergence of cryptocurrencies. The authors aim to demonstrate that, under these new conditions, a portion of the money market will not be under the control of governments. Instead of confronting this phenomenon, the government should endeavor to regulate and legislate in this area, in order to reduce the loss of a smaller share of the seigniorage in the market.

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This book is sponsored by TOSAN Group and is published by Way2Pay Press

ISBN 978-622-7702-99-6

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