Makoto Nishibe

The Enigma of Money

Gold, Central Banknotes, and Bitcoin

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This is the English translation from the Japanese language edition: The Enigma of Money: Gold, Central Banknotes, and Bitcoin by Makoto Nishibe. Copyright © 2014 Nishibe Makoto All rights reserved. First published 2014 by NHK Publishing, Inc., Tokyo, Japan.

ISBN 978-981-10-1818-3 ISBN 978-981-10-1819-0 (eBook)
DOI 10.1007/978-981-10-1819-0

Library of Congress Control Number: 2016956542

Printed on acid-free paper

This Springer imprint is published by Springer Nature
The registered company is Springer Nature Singapore Pte Ltd.
The registered company address is: 152 Beach Road, #22-06/08 Gateway East, Singapore 189721, Singapore

Preface

The title of the book, *The Enigma of Money*, does not mean this is a book about the "enigma concerning money." In his *Tractatus Logico-Philosophicus*, the philosopher Ludwig Wittgenstein says, "Not how the world is mystical, but that it is" (6.44). This is exactly what *The Enigma of Money* means. The enigma does not lie in why money takes different forms like in gold, Japanese banknotes, or Bitcoin but in the existence of money and its persistence.

The book's answer to the question is that money exists as the "self-fulfillment of idea." This has become more easily recognized as the transformation of money from gold to Japanese banknotes and to Bitcoin – informatization of money – has progressed. The "self-fulfillment of ideas" appears repeatedly in such economic phenomena as trends, booms, bubbles, and economic growth.

You may think the money theory in this book is a similar claim to Katsuhito Iwai's "money form Z as the infinite circular logic" in his *On Money* (Chikuma Shobo 1993) or "an infinite chain of expectations" in *Theory of Capitalism in the twenty-first Century* (Chikuma Shobo 2000). Although there are similarities, it is never the same.

Iwai's discussion basically depends on conceptions of "the infinite" and "expectations" and also implicitly assumes human "rationality." As Iwai's "infinite chain of expectations" is equivalent to "self-fulfillment of expectation" among those two forms of "self-fulfilling ideas," it only reveals half of "the enigma of money." "Self-fulfilling ideas" have another "self-fulfillment of custom" from the past, which plays a larger role in money's stable persistence.

With regard to the "self-fulfillment of custom," we have to admit that the internal rule applies – "imitating others" (essential to the generation of money) = "an indirect desire to seek the thing whose direct exchangeability is higher than X%"; the "enigma of money" can be explained in our daily life. Then there is no need to bring in the metaphysical concept of "infinity" and mystify money as Iwai did. Also Iwai, by assuming a market economy in which one global key currency exists like God, thinks hyperinflation of the "dollar" would bring the market economy to collapse, theoretically excluding the diversity of money or competition among plural currencies. This book provides a theoretical framework to think about a world where not

only such state currencies as dollar, yen, or euro but electronic monies, community currencies, and crypto-currencies like Bitcoin coexist and compete over quality.

This book is different from Iwai's *Money Theory* in the sense that it does not comprehend money only from the perspective of infinite expectations based on human rationality; it does not assume a world of a single money; and it argues that monies will evolve through their diverse coexistence and competition over quality.

It also should be noted that this book considers money to be the prerequisite of markets. For example, *Reinventing the Bazaar: A Natural History of Markets* by John McMillan who specializes in auction theory and contract theory provides a much more realistic view of markets than general equilibrium theory in microeconomics textbooks do. Although it offers rich explanations about property rights, information goods, and auctions in the institutional design of markets, it does not mention money at all. The viewpoint of "no money, no market" or "money generates markets" developed here is totally missing. Even an economist with a good understanding of markets cannot properly locate money in market theory.

The final challenge of the book is to reconsider the direction of capitalist market economy which I questioned in my previous book *Whither Capitalism?* from the perspective of the future of money. In modern capitalism, states and unions of states bail out financial institutions, large corporations, and states that are about to go bankrupt and collapse in frequently occurring financial crises, citing the maintenance of economic order when they do so, but they do not save individuals or small and medium businesses. Central banks set the inflation targets and implement an unlimited money supply, to get out of the recession and help economies recover. Thus, not only do inequality and an economic gap expand as a consequence, but unfairness associated with the opportunities and rules of the game is also increasing. As governments give into the self-contradiction of waiving capitalism's fundamental principles of free competition and self-responsibilities only for a group of big players, people's credibility in capitalism should decrease; and it could become increasingly difficult to obtain popular consent to participate in those games. Pseudo-currencies, crypto-currencies, electronic currencies, and community currencies seem to be emerging as a countermeasure to crises that are financial, fiscal, and monetary. I must now watch further developments to see if they could lead to a crisis of capitalism.

In the mid-1990s, I was supposed to write and publish a book called *Exploring the Forests of Economy: Discovering the Market as a Metaphor*, whose contents were going to be similar to the thesis of this book. It was halted for a variety of reasons. A series of basic propositions on money such as "no money, no market," "money generates markets," "money as the self-fulfillment of an idea," and "when money changes, markets will change" plus many features of the present book, such as a naked emperor, stone money in Yap, the Robinson Crusoe story, how markets are fixed in electronic bazaars and stock markets, and the bubble histories of the tulip, Law's system, and the South Sea Bubble Company, were drafted for that volume. I added to this book an examination of the money new movements like *Yenten* and Bitcoin, the quantitative easing of QE and Abenomics, and the meaning of such movements as Occupy Wall Street.

Exploring the Forests of Economy 20 years ago was supposed to answer various stupid questions. Its draft introduction had a list of those stupid questions: "Would a state go bankrupt?" "Why is the interest rate positive? What if the interest rate was negative?" "Why are counterfeit bills so disturbing? What is private money?" "What could happen if the interest rate was zero (or 100%)? Could the interest rate be zero?"

Although I prepared these questions as a sheer nonsense list back then, I was now surprised after 20 years to open the time capsule and find that they were all proper questions fit for the current situation. I don't mean to say I had foresight. I wrote down those questions as an aphoristic satire on things that can hardly happen. Looking at them now, such reservations have disappeared. The reality of money has dramatically changed beyond our imagination over the past 20 years. Nevertheless, we are so used to it and live the reality as a matter of course. Probably, it's better to think similar things could happen from here on too – a different world would come where ridiculous stupid questions could be proper.

Lastly, I'd like to thank Shuichiro Ito at NHK Publishing for his editing efforts.

Sapporo, Japan Makoto Nishibe

Acknowledgments

This book is a translation of Makoto Nishibe, *Kahei to iu Nazo: Kin to Nichiginken to Bitto Koin (The Enigma of Money: Gold, Central Banknotes, and Bitcoin)*, NHK Publishing, 2014. I owe a great deal to Mr. Yoshiyuki Shiraishi and Prof. Keith Hart for their assistance in translating this text into English. I would like to express my sincere gratitude to them.

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Chapter 1
The Enigma of Money: If We Understand Money, We Will Understand Economy

Not how the world is mystical, but that it is.
(Wittgenstein (1922: 6.44))

1.1 What Is the "Economy"?

When we say the "economy," we think about issues related to money or material matters in our lives. Or some may say "economy" is so abstract that they have a hard time understanding what it really is.

Newspapers report various events concerning the economy using numbers such as an increase in the overnight call rate or the unemployment rate, a decrease in the diffusion index, an increase of the monetary base and money supply, an advance of the Nikkei Stock Average, and so on. In short, economy is a world made of various economic figures and data. GDP, price, interest rate, foreign exchange markets, and stock prices – all these are indicated through objective numbers. Therefore, we tend to think economy is something dry and solid.

Economy, on the other hand, is also a constantly changing world and never stays still. Economy goes well or badly. Bubbles boom and bust. Economy keeps changing. As when the Soviet Union and Eastern European socialist economy collapsed, the entire framework and system underlying the economy itself can shift from an old to a new pattern.

Economy is not only about change in numbers, which are visible, however, but it also involves dynamic changes in the invisible structure or system of economy. Economy has aspects that go beyond numbers.

What is the economy? It is not easy to answer the question in a few words. We find it very difficult to explain it in words, although the economy surrounds our everyday lives.

There are a number of ways of explaining the economy. Most books about economy are nothing more than a diluted summary of economic textbooks. It's hard to find a book that answers the question "what is the economy?"

Even in the world of economics, many explain economy from a particular standpoint, even though there are many perspectives in economics. Few admit that economists provide a certain viewpoint about economy.

M. Nishibe, *The Enigma of Money*, DOI 10.1007/978-981-10-1819-0_1

1.2 Plural Visions of "Market": Market as Metaphor

We all know that the economy today is formed through an "institution" called "the market." "Institution" here refers to a bundle of shared rules which many of us recognize or shaping behavior in a certain society. We could say that the economy we know is nothing but a market economy. If we learn about "markets," will we understand the economy? In turn, people might be at a loss to explain what a market is.

What comes to mind when you say "market?" You may think about an "*ichi* (marketplace)" where people used to get together at a given time and place to bring various commodities to buy and sell. This used to be common all over Japan. The names of some cities in Japan like Yokkaichi or Youkaichi are derived from the market. You may think about an exchange market where people hold auctions, like a stock market or a fish market. It could be another scene from a foreign exchange market where several people sitting around a table shout and throw pieces of paper at each other. Or is it a computer system that allows financial settlements through exchanging electronic signals?

Some may think about a more ordinary scene like a storefront selling some particular products such as vegetables or fish or large retail shops like department store displaying many different things in an appealing manner. It could be the demand-supply curves that you learned in your first-year economic class.

These are all "markets." There are many different aspects to them, and they hardly conform to a uniform model as described in an economic textbook. We can say, at least, that there are several different kinds of market with different purposes and mechanisms. There are different market forms even in the market economy that we live in.

We can tentatively assume then that a market is a "place" where various goods and services are bought and sold as commodities. A "place" here does not necessarily refer to a physical site that exists somewhere like "ichiba." It can be an abstract and metaphorical place such as an auction site on the Internet. In other words, "market" is a kind of metaphor.

1.3 "Economy" Is a Living Thing

"The economy" is not an elaborate machine; it's a vague, waning, and rather human world. We can describe it differently depending on how we understand it, and the whole picture changes according to how we comprehend it. We could also say that it's a world we can change by changing our perspectives and perceptions.

Economy is neither something we can physically touch nor a shape we can see. It's rather a holistic system generated through our perceptions and actions. Economy is a system where an institution called the market shapes and facilitates our lives. We need to recognize that this economy has its own mechanisms, operations, and rhythms.

About 100 years ago, Alfred Marshall, a teacher of John Maynard Keynes, said that economists should pay attention to "economic biology" rather than "economic dynamics." He suggested that the economy is not a mechanical device which functions and changes, but is rather like an organism that grows and develops by connecting various organs.

About the same time, Thorstein Veblen, an American economist, also had the idea that economics should be an evolutionary science. Neoclassical economics, which was mainstream back then and still is even now, explained economy through a theory similar in scope to Newtonian mechanics, dealing with astronomical movements or the thermodynamic movement of gaseous molecules.

A machine-like idea, however, will not help us to understand economy. Like evolutionary theory in biology, economy is a cumulative process which develops in a particular direction through a constant process of cause and effect which creates the next set of causes and effects.

Although these people's ideas were great, they have never been influential in economics. Probably they were too far ahead of their time. However, more attention has been paid to evolutionary economics in the West and Japan over the past two or three decades, open to the idea of economy as an evolutionary system, so that evolutionary economics is growing in strength.

1.4 If We Understand Money, We Will Understand Economy

So what is important if we wish to understand this living thing called economy?

It seems to me that it is money – the money we live with every day, like air or water. Understanding money should be the best way to make sense of the history of economy as a system.

Why do we use money? What is price? What does an interest rate indicate? What role does money play in markets? Why does money circulate among people when it has no value in itself and why do people want money so much? Once we start thinking about money, various questions pop into our minds.

What is money, to begin with? This is the most fundamental question. But we find it a rather tough one to answer. Some may say "money is anything used as money" or "money is money because it is used as money," which sounds to me like a Zen dialogue. Here they use the word "money" to define money, leading them into a circular logic.

Usually, when we define a word, we must not use the same word to define it, in order to avoid being circular. In the case of money, however, it is extremely difficult to define it by something other than itself. This is because, as we will see, money is itself based on a circular logic.

1.5 The Enigma of Money: A "Thing" or an "Event"?

Is money a physical "thing" that we can touch? It's not quite clear. For example, let's think about the money we use to buy food and drink. We use a 100 yen coin to buy a can of coffee from a vending machine or a rice ball at a convenience store. It is a coin and makes a sound if it is put into a vending machine. You can not only hear the sound but also touch and see it. On the back of it is a number "100" or "2007," the year it was manufactured. A coin is a "thing" in that we can verify its physical existence using our five senses. The same is true of a banknote or bill.

When we buy something with money, we give it to a counterpart in exchange for a product. Once a "thing" called money, made out of metal or paper, has left you and gone to your counterpart, it won't come back to you.

What about a credit card? The holder's name and ID number are on it, but no numbers indicate the quantity of money like "100." The card is swiped through a reader when we buy clothes or electronic products. We punch in the PIN or sign a receipt and they return a plastic "thing" called a card. Unlike a coin or bill, the credit card is not a "thing" you can give to your counterpart.

A credit card is physical material made of plastic, but it has a totally different meaning and plays a quite different role from a coin or bill. We call it "plastic money," so a credit card is a kind of money, but the money itself is invisible. This is because a plastic card is not money. Coins and bills are cash; a credit card is not. It is not money itself; it is a means to borrow money and to pay for products and check the personal information of a cardholder who is about to borrow money.

When you use a credit card, your credit limit is verified according to your personal information, such as occupation, income, or repayment history. If your purchase is within the limit, you are allowed to borrow money from a credit company and buy a product. Therefore, purchase by a credit card is a system using "credit currency" anchored to cash.

A prepaid card like *Suica*, used to ride trains operated by Japan Railways and other rail companies, employs the contactless IC card technology called *FeliCa* developed by Sony. It looks like a credit card, being also plastic, but there is a big difference between the two. Numbers are electromagnetically written on an IC chip within the card to indicate quantities of money. Every time it communicates wirelessly with the reader-writer in an automatic turnstile, a fare is deducted from the money stored in a card. If the balance is short of the fare, the holder cannot exit the turnstile. It's not like a coin or bill in that you don't give a "thing" and it won't come back to you; you give numbers recorded electromagnetically by Japan Railways. In this case, you do not give a plastic prepaid card in exchange for a train ride; you give numerical information stored on the card. The number on these prepaid cards is often called its "value." An electronic signal indicates that this "value" is a "thing" like a coin or bill, so to speak.

The prepaid subway card for Sapporo City, where I live, employs a thinner PET card. In this case, the material is polyester, and the technology is a bit more backward than electronic money like *FeliCa*, but the principle of exchanging "value" is

more or less the same. One difference is that the “value” remaining is written on the back of the card so that you can see the balance.

In the case of a coin and bill, we exchange physical materials such as round metal objects with numbers inscribed on them or a square piece of paper, while a prepaid card exchanges “value,” data signal stored in a memory. Money is no longer a “thing” that we can feel with our five senses. We can only see numbers on a screen supported by hardware like computers and reader-writers, as well as software such as OS and applications, rather than the data signals themselves.

This does not mean that money is a mere dream or illusion; it certainly exists, since we buy products with it in the market every day.

By discussing the various types of money, we come to realize that money exists not only as a natural “thing” but also as a social “event.” I use this term because some money forms involve our personal information and individual status within certain institutions based on our social ability to imitate and learn as well as to believe and expect. Similarly, the economy exists both as natural “things” and as social “events.” We usually don’t have much chance to think through these issues in our daily lives, but this is really enigmatic and surprising.

To understand the economy, there is no need to read through explanations of the mechanisms of specific economic phenomena written by economic experts or in economic textbooks describing the market mechanism through models and mathematical formulas. These explanations or descriptions make us forget the very enigma of money and market. They do more harm than good.

What is useful for understanding markets, bubbles, and the economic cycle is to learn more about the enigma surrounding our most familiar thing: money. Understanding the ecology of money for purposes of everyday life helps us to understand the ecology of economy.

This essay aims to help us think about the modern economy, which is hard for us to understand, through focusing on the enigma of money. Some may have an impression that monetary theory is abstract and difficult; but it need not be so. We have collected many historical anecdotes and analogies here in order to make it enjoyable.

Chapter 2
Is Money a "Thing" or an "Event"? Reconsidering Money and Market

2.1 Money and *Okane*

"As long as you have money, you can buy anything you want and do whatever you want to do. If you are not sure what to do with the money, you can save it for the future. Money is a wonderful fascinating thing. Therefore, it is not something you can earn easily. You have to work hard to earn it."

We have been told a story like this about the importance and dignity of money since we were kids.

But we also know that money is something scary and it has long been a source of conflict between us human beings. People steal, fight, lust, and even kill for money.

What is money? Where does the fascination and magic of money come from? Many philosophers and economists alike have tackled this big question since ancient times, but it appears there is no conclusion yet. Let's take a quick walk around money first.

The Okane *Story*

Japanese puts an "o" in many words. *O* has been simplified from *oho*, a prefix for limited things associated with respected people. It now shows politeness to a listener. *Okane* may be an expression of politeness. In Japanese, the difference between politeness and indirectness can be next to nothing. Speaking indirectly can be a politeness. *Okane* is also a friendly and soft way of meaning money. On the other hand, *kahei* (money) seems coldhearted like a term from economics. In English, it's more convenient since it's only "money" in an everyday sense.

The word "money" – originally a foreign word – seems to be widely accepted in Japan these days. It's probably because the strange rule of inserting "o" does not apply to foreign words. Money is money. No one says "o-money." Perhaps the sense

M. Nishibe, *The Enigma of Money*, DOI 10.1007/978-981-10-1819-0_2

of money in Japanese today has changed. The somewhat distorted and indirect emotions surrounding money – "I want money but cannot say so" or "money is precious and I cannot ask for it explicitly" – may have been lost. I suspect the word "money," which sounds more neutral and direct than *okane* and is not inherently a Japanese word, has lost the sense of being special because everyone is more or less well-off and believes they belong to the middle class.

Why does *okane* cause distorted emotions? Let's discuss here the enigma and mystery.

Anything Can Be the Material of Money

Take away the "o" from *okane* and it becomes *kane. Kane* is a general term for metals such as gold, silver, copper, or iron. It also means money. Gold was worshipped in the Roman Empire and also became a feature of European civilization when Germanic civilization succeeded its Latin predecessor. Spain and Portugal brought back a massive amount of gold and silver to the European continent from America and Asia. Some even trace the rise of capitalism in Europe to this fact.

In Kamigata (the traditional Kyoto and Osaka area) Japan of the early modern period, silver was used for money. Accordingly, they read the word silver as *kane*. At that time, Japan adopted the bimetallic standard system of gold and silver. Since silver was appreciated more higher than in Europe, the Dutch and Portuguese went around shopping for gold with silver and lots of gold drained out of Japan. Money reminds us first of gold or silver.

People usually cite the following reasons for why money takes the form of precious metals like gold or silver. First, they point to its durability. It needs to be a material that can exist almost permanently without decomposing. Because of its particular characteristics such as malleability and viscosity, it can be split or stretched indefinitely, which is convenient for minting. It can have a high value for a relatively small quantity, making it portable. Gold and silver are rather soft metals, so their coins can be shaved or worn naturally while in circulation.

A bill of exchange, while it is vulnerable to fire or water, is light to carry and cannot be shaved. If you put gold coins into a bag and shake it, coins slightly shave gold off each other when they are hit. This decreases the gold content of money. In this respect, a bill may be superior to gold or silver. Although gold and silver have positive qualities as money, money does not have to be shiny gold or silver.

Throughout human history, almost anything has been used as a material for money: feathers, cigarettes, shell, cloth, rum, iron bars, slaves, wheat and rice, and piece of paper. In a primitive economy, more unusual monies existed, for example, whale teeth in Fiji, decorative breastplates in New Guinea, and dog teeth in New Britain. In the African kingdom of Dahomey, cowries and iron bars were circulated as money. Anything qualifies to be money.

Religious and Psychological Functions of Money

Money is said to have various psychological or religious functions. One new religion told its followers that donations would expel the devil's impurities. These donations, which could be as much as ten million yen per person, are a kind of religious payment of our day. Money is one way of "purifying" through repayment of social obligations.

A book entitled *Living with Melancholia* written by a psychiatrist Shintaro Shiba says many Japanese "live with depression," and this comes from a predisposition for melancholic depression to be "honest, precise, clean, serious, and hardworking." It's endemic to Japan. Why is it so widespread?

According to Shiba, the cause is found in the characteristic proportion of gift to exchange in Japan. The weight of an "exchange" that compels a return for past gifts or favors – an aspect of "money" as a general name for exchangeable quantities – is much higher than a "gift" that keeps on giving without asking for any returns, an aspect of "things" as the proper name for unexchangeable qualities, in a Japanese community. Under the circumstances, people constantly feel compelled to return the obligation called *Giri*.

"*Giri*" is a Japanese moral duty linked to social indebtedness. Although it is not that popular anymore, it is still a common practice in Japan for women to give an "*Giri* chocolate" to their colleagues and seniors on a Valentine's Day. As a result of constantly feeling obliged to repay social debts, there are lots of people suffering from melancholic depression. If a new religion preached that debt feelings in such a endemic disease were impure because they arose from dealings with money, many people would be willing to contribute a large amount of money to escape from their mental sufferings.

"Exchange," in Shiba's term, includes not only "markets" – buying and selling commodities by means of money – but also "reciprocity," gift and return in a community, in other words, "mutual help" (*Yui*).

However, throughout this book, the term "exchange" is used only to mean barter or monetary exchange, i.e., commodity trade. It is important to note the difference. In "reciprocity" when lending and borrowing takes place, someone who has received a gift continues to feel obliged until he gives back. In commodity trade using money, since the money and commodity are equivalent, the relationship between the seller and the buyer is simultaneous and instantaneous, leaving no room for credit or debt. The relationship is completed with every commodity trade and both parties remain as separate individuals with no further relationship. The human relation in markets is a cash nexus, in which relations are separate and completed each time.

In a reciprocal world, purgation function of money as expelling "impurities" is thus religiously and psychologically meaningful. In the world of markets, on the other hand, such a function of money is not necessary. Rather, money paid in compensation is needed to end reciprocal relations between lovers and married couples. We are now witnessing reduction of reciprocal relations caused by rapid expansion of the world of markets.

I understand modern globalization not just to be a quantitative (macroscopic) expansion of markets as networks of monetary trade. I believe it also includes the

qualitative evolution of capitalism. What I mean by this is that many individuals were once consumers who worked in factories and companies as laborers and wage earners, received wages, and bought necessities and luxuries. Under globalization, whether we are aware of it or not, everyone is not only a laborer and consumer, but is compelled to become an active investor or moneymaker.

Over the past 20–30 years, globalization has reached all over Japan. If the TPP (Trans-Pacific Partnership) is agreed, the tendency will become even stronger. Then the number of those suffering from melancholic depression as endemic of Japan may decrease, especially among the younger generation, much as the practice of giving *Giri* chocolate may disappear. What would happen actually?

2.2 What Is "Market"?: Modern Economics Neglects Money

No Money, No Market/Commodity

We live in a market economy. The market is a place where goods and services are bought and sold with money. Market economy is an economy made up by markets. With no money, we cannot buy necessities in the market. If we cannot buy necessities, we cannot make our living for a single day. There is no denying it. Without doubt this kind of economy is a market economy. The meaning of the term, market economy, is too wide, however, to describe well the characteristics of our economy. How could we describe it then?

We live in a capitalist market economy. This is a particular type of market economy. "Capitalism" is one term describing "market economy." For now, we can describe capitalism as follows:

Capitalism is a state of economy where we use money to buy something and to make a profit by selling what we bought. "Investment" is widely accepted in society and it can be made in any market. In other words, a capitalist market economy is a market economy where we use money or things we can buy with money to make money. We can also say it is a market economy which allows us, as a rule, to use money, commodities, and markets for the purpose of moneymaking.

We said "things we can buy with money." These things, whether they are goods, services, or information, are "commodities." In reality, the scope of "things we can buy with money" varies across times and regions. In other words, the rules of "commodification" vary. For example, making money by trading in slaves or drugs is not only ethically unacceptable but also against the law at present. If we buy those things with money in secret, we may call it a black market.

In the United States, however, a country with the most advanced capitalist market economy, political liberalism, and democracy, human beings were traded as slaves until 150 years ago, over more than two centuries from 1640 to 1865. After the discovery of the continent by Columbus, slave merchants from England, France, and the Netherlands provided a number of black people from Africa to the Americas as a trade commodity. Cotton plantations in the South made profit by exploiting

slave workers. Trading in slaves was legal until the mid-nineteenth century when President Abraham Lincoln proposed the Thirteenth Amendment to the United States Constitution (1865) abolishing slavery under the Emancipation Proclamation. The South lost the Civil War and slavery was abolished.

Let's go back to our main topic. By now it is clear what a crucial role money plays in a market economy. That is not all. The point here is that if there is no money, then there cannot be a market. This may sound obvious, but it is not an idea widely accepted in economics. Why is this so?

Fictitious Markets in Modern Economics: What Is a "Concentrated" Market?

The mainstream in modern economics is neoclassical economics. It is so-called microeconomics in college courses or government employee examinations. We rarely call it "neoclassical" anymore. If we did, we would be admitting that it is just one of various schools of thought and cannot be the one correct theory. We have stopped using the label probably because, without being aware of it, we have come to believe that it is only the correct theory.

Anyway, the most general market analysis in microeconomics is called "general equilibrium theory." This starts by discussing a situation where the exchange of a good for another good ignores money's presence in a market. Good here refers not only to a material good but also to services, information, and rights. Here, a place for barter is considered to be a market. The value of a good is measured as a quantity of other goods. Let's assume that two apples and four oranges are exchanged for each other. The value of an apple is two oranges, and the value of an orange is half an apple. Now, let's think about a situation where an apple farmer wishes to sell more of them if the price increases and a consumer hopes to buy and eat more if the price goes down. There must be a price where the farmer and the consumer want to sell and buy the same amount of apples. That is, they think the price is set where the demand for and supply of apples coincide.

"General equilibrium theory" assumes that these adjustments can take place all at once for all goods. If there is a combination of price and quantity where the demand and supply of all goods coincide, it is called "general equilibrium." In order for this to exist, demand functions and supply functions in terms of price and quantity have to have certain properties. The conditions for perfect competition must also be satisfied. When all those conditions are met, it is assumed that the market economy will smoothly reach general equilibrium through competition, where prices and quantities are determined by the demand and supply of all goods.

According to general equilibrium theory, there are two sorts of goods. Like air and water, goods available far beyond our consumption needs that anyone can enjoy are called "free goods." The value of a free good is zero: It is free. Even if the price is zero, supply exceeds demand and thus it is not scarce. Goods whose supply lowers

demand above a price of zero and whose demand and supply meet at a certain price point are called "economic goods." These are available as not available in quantities to meet all people's wants. Therefore, they are scarce. Some say that "economic goods" refer to "commodities" since monetary value is paid to acquire them. However, not all scarce goods can be bought with money. A "scarce economic good" and a "commodity as a good that money can buy" are not necessarily the same.

If we consider the case of slaves or drugs, it is clear that whether or not a thing can be bought with money – whether it is commodity – cannot be determined only by scarcity. Whether a thing is a commodity we can buy and sell with money is determined by social rules such as the culture, customs, common sense, ethics, and law of a particular country, region, and time.

Whale fishing, a hot topic these days, is another pertinent example. Whether whale fishing to make its meat a commodity should be permitted cannot be determined just by the number of living whales, i.e., by scarcity. Some have an attachment to and affection for whales as animals, while others have a traditional culture and custom of fishing for and eating whales. Both vary depending on country, region, culture, or tradition. Nevertheless, we insist on setting up a global rule, regardless of particular times and regions.

General equilibrium theory owes its existence to regarding a market economy based on trading goods with money as a form of barter with no money. Today's theoretical model of market economy was built by being oblivious of the presence of money.

How could this happen? They had to invent a type of market where all buying and selling is conducted at once after the prices of all the goods are adjusted so as to clear the gap between the demand and supply of all those goods. It is an over-concentrated market where all the participants get together in one place and conduct all the trades at the same time. Let's call it then a "concentrated market." As long as we imagine such an ideal market, it is possible to build a theory which assumes that if only there were prices, they would adjust themselves even without money. This requires an assumption of "the law of one price" where each good has a single fixed price and all trades can be made simultaneously. It is as if they were describing a world with no conception of time. The world of the market model is one far from reality. The most questionable part is that the model is based on this conception: "a market can exist without money."

This essay proposes a completely opposite view: "no money, no market." We call the real market, which comes to exist only through money, a "distributed market." We will see later why it is called this.

We do not point simply to the fact that a really existing market is always accompanied by money. Economic theory aims to extract important properties and aspects from actual phenomena and to explain the market system holistically by reconstructing it. We believe that money is an absolute prerequisite of markets. It is just like we need language for us humans to communicate with each other and develop culture and civilization. This essay insists that there is no market without

money, just as there is no culture without language. Market theory without its prerequisite ends up with nothing more than a fairy tale that misses crucial aspects of reality.

A Real Market: What Is a "Distributed" Market?

Now let's think how we can describe markets from the perspective of "no money, no market." We have said that a "concentrated market" in modern economics is a fiction. How then could we comprehend real markets as opposed to theirs? It is time to say what a distributed market is.

A market is a "place," in a metaphorical sense, where we buy and sell goods with money. It is not just about wholesale markets for fish or vegetables, a securities exchange, or a foreign exchange market; shopping malls, discount stores, vending machines, ticket vendors, money withdrawn from a bank account for a fee, mail order by catalog or television, online shopping or auction sites on the Internet, and joining a company as an employee, these are all markets. We are not always aware of it, but the market exists everywhere around us.

Some markets did not even exist decades ago, e.g., e-commerce markets such as mail orders via the Internet and net shopping. Japan's Rakuten Market, operated by a well-known firm, and search portal sites, like Amazon.com and Yahoo! Shopping, look like a huge online mall or a large-scale e-commerce store. Amazon.com enjoys the largest domestic sales in the world with revenue of $7.8 billion in 2012. Rakuten follows with revenues of 443 billion yen. Rakuten's registered membership is 82 million people. Given that Japan's population is 127 million, about two thirds of the nation has joined Rakuten. Of course, foreigners, stores, and businesses might be counted in addition to individual citizens. Some may have plural accounts, so that the number needs to be reduced, but it's a big number anyway.

One thing we need to point out here: Although numerous goods are traded on a single site in the e-commerce market, this is not a "concentrated market" with no money, where relative prices only work like parameters. Rather, it is "distributed market," a collection of individual trades by way of money. It's not just large shopping malls. There are many net mail order businesses and mom-and-pop stores. Those businesses are also basically distributed markets.

Bilateral Transactions Are Basic in a Real "Distributed" Market

Almost all markets in reality are basically composed by one-on-one "bilateral transactions." Furthermore, prices are not determined at the equilibrium where the demand and supply coincide, as in general equilibrium theory.

Actually, there are markets on the Internet similar to a "concentrated market." One example would be an auction market like Yahoo! Auction. Here participants bid up the price within a limited time, starting at a set minimum price, and the highest bidder wins. A seller wishes to sell for as much as possible, while a buyer wishes to buy at the lowest possible price. Buyers compete and bidding will push the price higher.

The features of an auction market are that a number of buyers get together in a single place, examine the quality of each auction item, and decide a single proper price through competition. We have said that an auction is similar to a "concentrated market," but it is only in the sense that price is determined through competition. Pricing is individually fixed for each item. So even this auction bears no resemblance to the absurd idea that all prices are fixed at once, so that the demand and supply of all commodities coincide.

There are several different types of auction. Some auctions deal with art pieces or antiques that have a unique historical and artistic value as well as unique circumstances. Christie's and Sotheby's do business for the wealthy all over the world. There are also auction markets for vegetables, fish, and flowers of different qualities, reflecting origin, size, color, and taste.

Auctions are held at markets for such commodities as fruits/vegetables, marine products, meat, and fresh flowers of qualities that vary in origin, size, color, and taste. For example, Tokyo Metropolitan Central Wholesale Market has eleven market sites in Tokyo dealing with perishable foods. Tsukiji Fish Market, which was relocated from Nihonbashi in 1935, is the world's largest fish market, and the auctioning at its tuna wholesale market is very popular for foreign visitors. In fish markets across Japan, it is well known that wholesalers use their fingers as signs called *teyari* or *fucho*. Wholesalers quickly provide the auctioneers the price they wish to bid. Only the highest bidder can buy the fish.

Many seem to believe that financial markets such as stock, bond, foreign exchange, and futures and options are typical markets, to which market theory in economics applies. It is not the case, however. They are closer to distributed markets where sellers and buyers trade separately in time and space than to the "concentrated markets" which assume, in general equilibrium theory, that the prices of all the goods are determined simultaneously. Price fixing in stock markets looks like competition as in an auction, but the principle is that trades are made one by one bilaterally between buyers and sellers. When prices and quantities presented by sellers and buyers meet, trades are settled by payment of money. We realize then that bilateral transactions are basic even in the case of financial markets and that those markets are also distributed markets.

In the real estate market, prices are determined through individual negotiations between sellers – individual owners of land and properties or their representatives – and buyers for each transaction. Prices are set for industrial products like automobile and electronic products by calculating the cost of goods sold and then adding a certain margin to it. In the case of new apartments, prices are set and sold like industrial products, by putting a margin into the cost.

Hicks' Classification of Markets: Flexprice and Fixprice Markets

John Hicks of the London School of Economics, who had contributed significantly to general equilibrium theory, later questioned this theory and published a book entitled *A Theory of Economic History* (1969). We may wonder why an economic theorist wrote an economic history book in his later years. Hicks thought he had found problems with his own theoretical work from earlier. It seems to me that he wanted to examine the rise and development of real markets rather than rely on a theoretical construct that never existed.

Hicks thought there are two kinds of market: (a) "flexprice market," where price is determined by the relation between supply and demand, and (b) fixprice market where producers or bureaucrats set prices. He also divides flexprice markets into (1) "organized markets (auction)" and (2) "unorganized markets (market mediated by merchants)."

An "organized market" is one where price is determined by an equilibrium between supply and demand and an auctioneer moves the price along. This is the concentrated market presupposed by equilibrium theory. In an "unorganized market," on the other hand, merchants set prices individually, but they are still influenced by supply and demand. This realistic type of market has been dominant throughout most of history.

In *Economic Perspective* (1977), Hicks goes on to say that "organized markets, which are more competitive markets, so that they do work, on the whole, in a recognizably supply-demand manner, remain in existence in some particular fields; but the unorganized flexprice market, the old type, is on the way out. That modern markets are predominantly of the fixprice type hardly needs to be verified. It is verified by the most common observation (xi)."

Thus, Hicks clearly admits that the type of market he had analyzed in general equilibrium theory was neither dominant nor realistic in the modern world. This was both an insight and self-criticism.

It seems to me that Hicks came to write *A Theory of Economic History* precisely because he became suspicious of his own general equilibrium theory through observing the real economy. Nevertheless, economists in our times still teach students general equilibrium theory in microeconomics textbooks as the proper theory, not even reflecting on or critiquing themselves like the economist who helped found the theory. After all, a real thing cannot be easily copied.

"Distributed markets," as mentioned in this essay, might be a combination of Hicks' "unorganized markets" (market mediated by merchants) and "fixprice markets." But whether it is flexprice or fixprice is mostly determined by the nature of the goods traded and does not necessarily reflect different systems of market. In the case of perishable foods like fish or vegetables, the quantity of supply of these goods is changeable depending on such natural conditions as climate and disease. Then prices are apt to change just like flexprices. In the case of manufactured products, on the other hand, such natural conditions do not affect their production so that

the quantity of supply can adjust to unexpected changes of demand for them even with fixprices. For this reason, in order to mark the difference between real and fictitious versions of the market, the essay employs the labels "concentrated" and "distributed" markets rather than Hicks' distinction of flexprice and fixprice or organized and unorganized markets.

2.3 How Distributed Markets Work: Stock Markets and the Electronic Bazaar in the Real State of Affairs

How "Price" Is Determined

We have discussed so far the difference between the "concentrated markets" that general equilibrium theory presupposes and the "distributed markets" that really exist in this world. In order to provide a more real view of "markets" in a concrete manner, we will explain about two different markets: stock markets and electronic markets.

Markets, above all, are a "place" where people buy and sell goods. Examples are a fish market and stock markets, in which sellers and buyers get together in a single location. However, it does not necessarily have to be a physical place. Markets exist in metaphorical "places" such as electronic virtual space or social network. Whether it is on the Internet, mail order or selling directly to friends and acquaintances in someone's house, it could form a sort of market. Sellers and buyers do not have to show up on "markets" physically. In financial markets trading stocks or derivatives today, "robots" of system trading participate in markets as sellers and buyers and keep trading extremely fast human can never do. To put it in a more abstract manner, markets are information space consisting of "selling information" and "buying information."

Information only transmits what kind of thing someone wants to sell or buy, at what price. The agent who receives the information can make use of it. Those who want to buy look for the information on selling and check if there is the thing they want to buy and whether the product is offered at the price they are willing to pay. If all the conditions are met, you would inform the seller that you want to buy. If the buyer and the seller agree, trade takes place. These individual trades make up the whole trade of the markets.

Usually, there is a certain competition between a seller and a buyer. A seller, in an attempt to attract many buyers, tries to provide quality products for as little as possible. A buyer, hoping to find a seller of the product he wishes to buy quickly, also tries to put as high price as possible. A seller hopes to sell to someone willing to pay more, while a buyer wishes to buy from a seller who sells for little. Through competition between buyers and sellers, there should emerge a market price about each good at some point.

Then, how is a "market price" determined in the markets of information space consisting of selling information and buying information? Let's review how market price is fixed in stock markets.

Market Price Fixing in Stock Markets: Itayose *and* Zaraba

A "market price" refers to daily trading price. We will discuss how a market price is determined in stock markets.

Stocks are traded in stock markets called "stock exchange" or "securities exchange." At a stock exchange, the opening price is fixed by the method called "*Itayose*" (netting) at the beginning of a day's trading. *Ita* is a board describing how many people wish to sell or buy which stock at what price. It presents so-called demand and supply.

To illustrate, the opening price of a stock of a company called Yotsubishi will be as follows. Before the market opens, clients place buy or sell orders specifying the stock name, the number of shares, and the price, e.g., "Buy 1,000 shares of Yotsubishi at 80 yen." Buying or selling orders specifying particular prices are called "limit orders," while such orders immediately at the best available current price are "market orders."

When the market opens, brokers collect the orders and match selling orders of Yotsubishi at the lowest price with buying orders at the highest price. Then they decide the market price where sell and buy order quantities will balance. Buy or sell market orders have priority of execution over limit orders. Suppose the trading unit is 1,000 shares and the board shows the sell orders in Fig. 2.1, Table 1, at the opening.

Table 1

Sell orders (stocks)	Price (yen)	Buy orders (stocks)
5000	140	1000
4000	130	3000
4000	120	3000
2000	110	4000
1000	100	4000
4000	Market order	3000

Buying and selling

10000 Stocks done at 120 yen

⟹

Table 2

Sell orders (stocks)	Price (yen)	Buy orders (stocks)	
5000	140		
4000	130		
1000	120		120 yen Yari
	110	4000	110 yen Kai
	100	4000	
	Market order		

Fig. 2.1 "Itayose" (netting) case 1

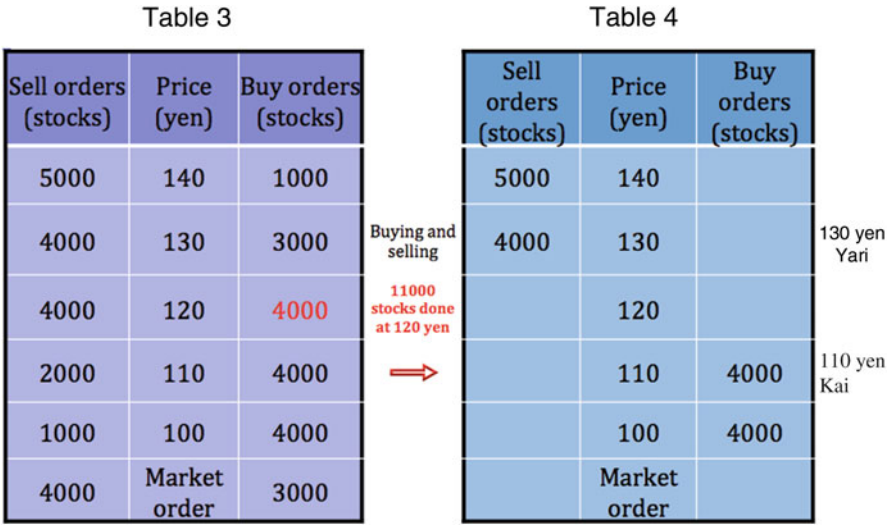

Fig. 2.2 "Itayose" (netting) case 2

Table 1 shows that there are sell market orders of 4,000 shares and limit orders of 1,000 shares at 100 yen, 2,000 shares at 110 yen, 4,000 shares at 120 yen (from the lowest price), etc. and buy market orders of 3,000 shares and limit orders of 1,000 shares at 140 yen, 3,000 shares at 130 yen, 3,000 shares at 120 yen (from the highest price), etc. The opening market price will be settled at 120 yen, where the number of sell orders totaled from the lowest price and buy orders totaled from the highest price matches. In all 10,000 shares will be traded. In this case, those who placed sell orders at 100 yen and buy orders at 140 yen – more unfavorable bids than the opening market price – can also trade at 120 yen. In selecting which 3,000 sell orders are filled out of the 4,000 sell orders placed at 120 yen, the "first-come, first-served" rule applies. The order that was placed the earliest is filled first and the next order is filled second. As a result, 1,000 shares of sell orders at 120 yen will remain unfilled and need to wait for other buyers to come up. The board reads *Kai* (bid) at 110 yen and *Yari* (ask) at 120 yen as in Table 2. It means "there are buy orders at 110 yen (demand) and sell orders at 120 yen (supply)." These prices are not actual trade prices; they are called indicative prices.

As in Fig. 2.2, Table 3, however, if there are buy orders of 4,000 shares at 120 yen, instead of 3,000 shares, at the opening, all the sell and buy orders at 120 yen are filled, and no orders will be left at the price on the board (Table 4). In this case, the opening price would be the same 120 yen yet the trading volume would be 11,000 shares, 1,000 shares more than in the previous example. The board would read *Kai* (bid) at 110 yen and *Yari* (ask) at 130 yen.

Once the opening price is settled, it will shift to "*Zaraba*" (continuous double auction) where many buyers and sellers make orders (bids and asks) and keep transacting whenever both orders correspond. When the board is shown as in Table 4, with buy orders of 1,000 shares at 120 yen and 2,000 shares at 130 yen (Fig. 2.3,

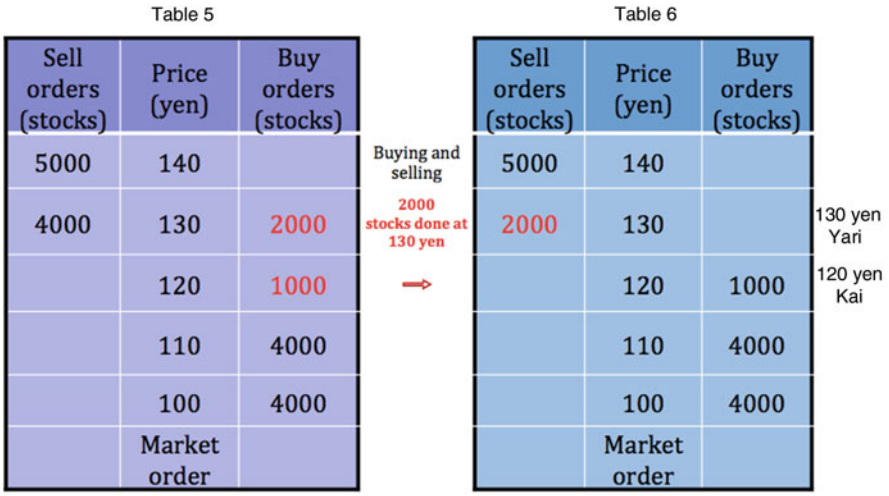

Fig. 2.3 "Zaraba" (continuous double auction)

Table 5), the first 2,000 shares of sell orders at 130 yen are filled, and sell orders of 2,000 shares will remain on the board (Table 6). Thus, trades are made successively in a continuous session while stock prices fluctuate and occasionally take multiple values at a time.

The market price at the closing of the session is called the closing price. As with the opening price, the closing price is also fixed by *Itayose*.

The orders for the day are removed from the board, but good-till-canceled orders stay. Those orders remain on the board and will be part of *Itayose* the next morning. The orders carried over from the previous day are given priority when selecting orders to fill.

This is how a market price is determined in daily stock markets. Stock markets are dominated primarily by computer trades these days, but *Itayose* and *Zaraba* still apply.

The Stock Market as a Model of General Equilibrium Theory

Leon Walras, who pioneered the development of general equilibrium theory, called a market where an auctioneer changes the price in order to let demand and supply coincide a "well-organized market." For him, the stock market was a good model for market theory. Walras built a market model based on stock markets.

But auction markets are never typical, as we mentioned. Considering the transaction costs of organizing an exchange, collecting all the information such as trading prices and volumes in one place, and communicating them to clients, it is impossible to open a market like this for all commodities. It's true that price is partially formed

by competition in an actual stock market. But a real market is a collection of numerous bilateral transactions, in which buying and selling occur at given prices and quantities. This is far from the model of general equilibrium theory where prices are determined at the point where demand for and supply of all the goods coincide.

General equilibrium theory developed its market model by collecting and assembling only these pieces that they considered convenient. Such a model is only applicable to a very limited number of commodities. Most general consumer goods such as food, clothes, electronics, and books are sold for fixprices. "Fixprices" here does not mean that those prices are permanently constant; they are periodically reviewed and heightened and/or lowered. Such products as machine tools, ships, and factories, whose price per unit is expensive and specifications vary, are made to order.

Price setting is more complicated with industrial products. Generally speaking, prices in this case are calculated by adding a margin (markup) to the cost of goods sold per unit, aggregating all the necessary costs of production from land, factory, machinery, and raw materials to labor. When demand exceeds supply, the seller will try to increase supply quickly by decreasing inventory or increasing the utilization rate to produce more. Conversely, when demand goes below supply, the seller will decrease supply by stocking up on inventory or decreasing the utilization rate to produce less. Thus, sellers should respond to short-term changes in demand through adjustments of quantity rather than price. They would make adjustments with price only when changes in demand levels become a long-term trend, which cannot be managed only by adjusting quantity.

In such a distributed market, the same commodity may be sold at different prices by various sellers because they have different levels of inventory and utilization of production as well as future expectations. Moreover, the same seller may set different prices at different times. Accordingly, the tendency of "many prices to one good" always prevails, since the same commodity is sold for different prices across time and space. A single set of price/quantity cannot be simultaneously determined at the equilibrium point of demand and supply.

In other words, sellers do not trade after a proper price has been determined by the market; they set their own prices, make quantitative adjustments to changing demand in a short run, and continue to trade at different prices by making price adjustments in a long run. As long as trades continue to be made, some may buy at too high a price while others sell too low. Some commodities could be left over, and others may be sold out. Economists insist that this happens because economic agents do not take rational actions or prices are not flexible enough. But actually, competition between sellers and buyers is always at work in a distributed market constituted by these bounded rational economic agents.

Electronic Markets Two Decades Ago

Let's move on to the next type of market: electronic markets. It's not about those currently growing huge electronic markets like eBay, Yahoo!, Rakuten Market, or Amazon; it's about the dawning of the electronic markets at the time of the personal

computer communication services that connected host computers and personal computers via telephone lines and exchanged information.

In the second half of the 1990s, there was Japan's largest commercial network called Nifty Serve with more than two million registered membership of personal computer users, and it was still expanding. There was an emerging electronic market, something that should be called an "electronic bazaar" – a humane and warm electronic market. It was like a garage sale open 24 h anyone can take a casual glance from anywhere in the world. Looking back from now, the primitive communication technology of those personal computers and modems of low specification back then and the services that only consisted of text information may look like an ancient past. But the electronic bazaar, since it did not have any additional features like auction or credit card settlement, can give us good opportunities to look into the essence of markets. Let's take a look at the essence and issues of markets from the electronic bazaar, an electronic market in the making 20 years ago.

In what was then the Nifty Serve electronic bazaar, trades were made among members using the menus of "Buy" and "Sell" on the "bulletin board." On the menus of "Sell" and "Buy," about 500 items of used personal computers (Fujitsu, NEC, Apple, IBM), word processors, and software were listed as selling and buying items by category. Sellers and buyers could post their offers with their suggested prices. Viewers could examine those offers and, if they are satisfied with the suggested conditions, send emails via host computers, express their interests in buying items, and negotiate the prices and conditions through mails. Once they reached agreement over the details such as the price, shipping fees, the payment method, and the delivery method, one would tell that he has accepted the conditions along with his address and telephone number. Negotiations were made, following the steps of proposal and acceptance through several exchanges of emails. If the negotiation goes well and agreement is reached, they would proceed to the trade. In some cases, they could not come to agreement over the conditions and had to give up those potential trades.

The electronic bazaar, like other general markets, has some problems and shortcomings. First of all, there is no verifying the items for buyers. If you buy used books or software that are cheap and hard to break, probably you don't have to worry too much. From my own experiences of actual trades of tens of times, fortunately, I did not encounter any troubles such as a big gap on the items' conditions between their descriptions and the actual ones. Although it may be hard to imagine now that the Internet is prevalent, only those got into personal computers were doing the personal computer communication back then. The boards and forums shared the atmosphere of an association of like-minded people and the cultures of trust and mutual help. In such a virtual community, the probability of a fraud of seeking his own interest and deceiving counterparts should be lower. Nifty Serve was a membership service where all the email correspondences were conducted on their host computers with the member ID functioning like credibility enhancement. In short, it enjoyed an advantage particular to a closed network.

The problem would be more serious if one would trade expensive items like computers or laser printers, however. Given that they are used items, there is no guarantee that they will work well. Even if they appear to be working at the time of purchase, they could stop working and break down sometime soon. Buyers can never find latent defects. Although there are services now with features like evaluation of sellers and bidders and customer reviews and recommendations, the current electronic markets share the same problems.

After all, buyers must rely on sellers’ conscience as good citizens. Sellers are unfamiliar on the other side of the electronic market with even their faces not visible. It is questionable how much we can trust them. There have been troubles constantly both back then and now about “latent defects.” More troubling is that items may be damaged during shipping. It would not be a problem if the transportation companies were insured, but it was not always the case. Moreover, many trade agreements did not cover damage during shipping, and either side had to swallow the cost after endless arguments.

Another difficulty is how to pay. The most common payment was that a buyer would wire money to a seller’s bank account. But if a buyer wires after confirming the delivered item, a seller would have to take all the risk associated with payment because they ship the item first. On the other hand, if the buyer wires first, the risk would fall in the buyer’s lap since there is no guarantee that the item would actually be delivered and no way to verify its condition. There were a series of frauds where a seller let a buyer wire first, but never ships the item and vanishes. A warning was sent out about those fraudulent cases.

The “cash on delivery system” (*daibiki*) came to be adopted as a way of avoiding these problems. In this system, a buyer would receive an item when it is delivered in return for payment of the amount agreed in advance. The payment is made to the deliverers. The problem of “latent defects” still persists in this case too, because a buyer cannot test the item and its conditions before paying.

Nowadays, there are better systems for avoiding the risks associated with trades than 20 years ago, introducing insurance in the form of loss indemnification and trouble compensation or developing systems for evaluating excellent sellers.

All these problems can occur because sellers and buyers are physically remote in electronic markets and cannot meet to trade face-to-face. So, the best way to do away with the problem is to trade face-to-face. To evade the “problem of defects,” it is essential that both parties should set the place and day/time, bring in trade goods and money, verify these items at the site, and make an exchange for money.

Face-to-Face Trades and the Market for Lemons

Would face-to-face trades then be free from risk? Human beings may have a natural ability to some extent to distinguish good people from bad. Nevertheless, deception has been a constant feature in human societies without the nature of other people having become transparent.

Inevitably even in face-to-face trades, there are "markets for lemons." This is an example of "market failure" that is not particular to electronic markets, but is prevalent in markets generally.

"Market failure" refers to a situation where markets do not function well even in ideal conditions, bringing about undesirable outcomes. Clear examples are pollution and environmental damage. Everyone knows that pollution is a consequence of corporations' continued disposal of drainage and smoke without proper processing, although this damages the surrounding environment. It is generally said that the market mechanism does not work here because the corporations do not consider the drain and smoke as a cost.

A "lemon" is "a good that looks clean on the surface but is sour." It is assumed that a seller and a buyer share an equivalent amount of information and knowledge about a product. In the case of a used car market, however, the seller knows much more about the weakness, defects, and poor qualities of a particular car. These are unknown to a buyer. In short, there exists information asymmetry between the seller and buyer. In such cases, the market mechanism does not work well and it favors the seller.

Of course, when a seller can clarify all those problems in advance, the information is known to the buyer and there should not be a problem. A buyer, being informed on those issues, judges the price and considers purchase.

Something similar happens with life insurance bought on the basis of self-report. The person, who is both insurer and insured, must know most about his own health condition, but he does not necessarily report these honestly even though he knows he has problems. Although insurance companies can reduce the risk with an examination by a doctor, it costs money and the examination does not always discover all the issues and problems. This is another example of "the market for lemons," since the information is shared unequally between the seller and buyer of an insurance product.

One way to avoid those problems is for a seller to guarantee the quality of the product he is selling. A manufacturer or seller guarantees exchange or refund if any faults or problems are found with the product within a period set by the warranty. In this case too, in order for a buyer to judge the reliability of the warranty, the seller must be credible. In the end, therefore, building social credibility is necessary, whether a warranty exists or not. Since electronic bazaars came along, various attempts have been made to guarantee the quality of a product someone wishes to sell (i.e., the credibility of the seller himself). It is hard to solve the credibility problem in highly anonymous electronic markets. In the case of the electronic bazaar on Nifty Serve, however, members established mutually trusting relationships to some extent, since membership encouraged a sense of belonging to a closed community, even though it was anonymous. Such a community solution can be a useful way of overcoming market failure. Social media like Facebook aim to build a network of friends based on profiles with real names and photos. It may be one way of building trustworthy relationships through a community of interest built on a disclosed basis.

Money Turns a Thing into a "Commodity" and a Place for Trading "Commodities" into a "Market"

We have discussed various types of real market. What properties do they have in common?

In all markets, commodities are traded for money as value. In short, anything tradable for money can be a "commodity." This means not only food, clothes, fuel, daily sundries, and electronic products but also information goods like movies, music, games and software, stocks, bonds, real estate, and labor (full-time and part-time work) can be commodities. In our market economy, social status, fame, organs, sperm, or even ovaries can be commodities if you pay money for them, although some of this is illegal.

On the other hand, rice grown by farmers for home consumption, housekeeping, and child care does not normally receive money as compensation, so these are not commodities (except in special cases). Money turns a thing into a "commodity" and a place for trading "commodities" into a "market." Markets are only possible with money. If there is no money in this world, there cannot be either a market or commodities. Money is a prerequisite for a market or commodity to come into being; it is not a convenient "tool" only for enabling efficient commodity exchange in the market. This is what we mean by saying "no money, no market."

2.4 The Principles of Generating Money

Is Money the Same as Language?

Rather than making barter more efficient and convenient, money makes exchange between a good and itself possible. Money, while opening a door to market economy and with it a rich material civilization based on wide commodity trading, can also bring unwelcome phenomena like hyperinflation, bubbles, crises, and recession when they collapse. Like language, it is a double-edged sword.

Human beings can use their two feet to walk and also to run. We can now move around more smoothly and faster with machines such as automobiles or airplanes that we ourselves invented. These vehicles are exactly efficient tools enabling us to travel further and faster. Money, however, cannot be compared to these tools. What then could money be like?

The above passage was expressed in language: "money is not merely a convenient tool for efficient exchange." Do we use language just in order to communicate smoothly with others or to convey messages? Has there ever been a world where we didn't need language for communication and then language was invented as a "tool" to overcome the small-scale or inconvenience of that world?

It is obvious that we cannot explain what we want to say or to understand what other people want to say without using words. We often recognize differences

between how we ourselves and others think and feel by exchanging words. If we didn't have words, our current civilization and diverse culture could not exist.

At the same time, communication is an experiment carrying the risk of loss at any time. Words do not necessarily make communications smooth. A little misunderstanding or disagreement can be easily solved with words. But we also know that a complicated emotional entanglement could get worse if we keep on speaking in a futile attempt to resolve it. A gap between people can easily become too wide for words alone to bridge.

It is not easy to accept or respect differences between ourselves. Opposite thoughts, beliefs, or world perspectives can often lead to breakup or violence. As a matter of fact, terrorism and war are continuing features of our world. Maybe it would be more appropriate to consider language as an essential "prerequisite" for communication to be possible, rather than a convenient "tool" for communication.

In the beginning was the word – it is words that differentiate Homo sapiens from apes or hominids. For better or worse, we cannot live in this world without words.

Love and Barter Have Something in Common

The same is more or less true of money. I suspect that many people believe we use money because it is convenient and brings benefits to its users.

Economics in general, as we have seen, also teaches that money is a convenient tool developed in order to solve the inconvenience associated with barter. The economists imply that barter existed before money and that the emergence of money only made barter easier. Let's discuss whether this is true.

Assume that there is a fisherman who just caught salmon and a hunter who just caught deer. Each of them has more salmon and deer than they can consume by themselves. Now, if the fisherman wants deer and a hunter needs salmon, they must barter between themselves. Barter cannot be achieved, however, unless they agree to an exchange rate of salmon for deer. Also, if the fisherman wants rabbit instead of deer, barter will not help. The conditions for barter to take place are much more stringent than they may seem.

Just as you can't make love unless both parties fall in love with each other, barter cannot take place unless each party wants the other's good. Barter is not possible without a "double coincidence of wants." While some manage to fall in love with each other, others end up with a one-sided love. They make them feel miserable. Actually, in the case of economy, it should be even tougher if your good cannot reach someone who wants it. For if he cannot obtain what he wants, he cannot live.

Let's assume then that the fisherman and the hunter come to an agreement through negotiation and compromise. In such a case, barter could take place if it is only two people with two kinds of goods, i.e., salmon and deer. However, as the number of players and goods increases, the chances of barter taking place become slim very quickly. In a case where there are thousands or tens of thousands of different goods out there and owners of these goods approach what they want indepen-

dently, it would be nearly impossible for a "double coincidence of wants" to occur accidentally.

If there is "something" anyone is happy to accept, however, this difficulty can be resolved. The "something" is money. If you have it in advance, others are willing to accept it. There is no longer any need to cry over one-sided love. If the hunter sells his deer first and receives money, he can use money to buy salmon from a fisherman who does not want deer. The hunter is now able to obtain salmon by exchanging twice: deer to money and money to salmon. You may have realized by now that the "deer to money" part is what we call "selling" or "sale," while money to salmon" is "buying" or "purchase."

When Money Comes into Existence

If money is that "something," how could it be born? According to the founder of the Austrian school of economics, Carl Menger, it is as follows.

We can imagine in a certain region that there is a good which many people wish to have. Let's say it is gold. The hunter may not want to wear gold accessories, but there are benefits in obtaining gold. This is because the fisherman who has salmon, which the hunter wants, is more likely to want gold than deer. If the hunter brings gold, the chance of his getting salmon increases. Accordingly, even those who do not wish to have gold itself would try to get gold in order to make exchange easier. Menger called the probability of obtaining such commodities as deer or salmon in exchange for gold "saleability." If gold is money (it is not very precise to call it money now since gold is not yet money and will "become money" later on), exchange by giving up gold and obtaining other commodities can be called a "sale." Probably there are not too many people initially who would want to consume gold itself, but more of them would gradually come to accept gold as money, because it is so saleable. This quality of being the most saleable good is how gold spontaneously evolved to become money.

A Generative Model of Money

We can explain this in a more general manner as follows.

There are five different goods, *a* to *e* (Fig. 2.4). Each of the owners of these goods wishes to have another good as an object of consumption. It is indicated by an arrow: an arrow goes from a good to another good that the owner wants. In the case of (1), there are no two-way arrows between any goods. This means that barter is impossible.

If we look at (1) more closely, we might realize this: There is a good that attracts more arrows than other goods. More people want the good. In (1), *e* is the wanted good, attracting arrows from two goods, *a* and *c*. Barter is a transaction where each

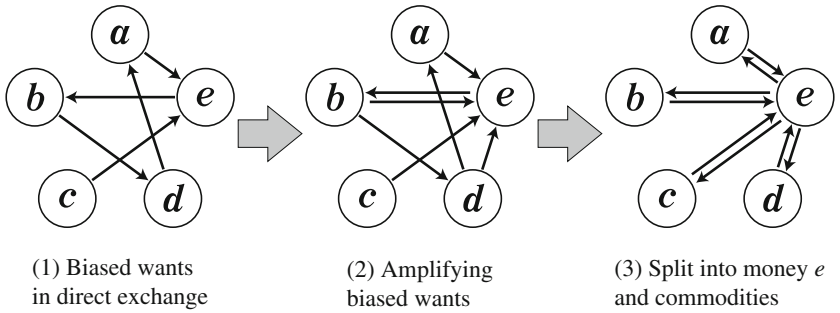

Fig. 2.4 Generation of money

participant mutually and instantly exchanges goods they want. It may be called "direct exchange." When many owners want a certain good, as in the example, that good's "direct exchangeability" is high.

The owner of the good that many arrows go to can have direct exchange with other goods whose owners want their good. Thus, the more who want a certain good, the more probable it is that direct exchange can occur.

Similarly, we can think about direct exchangeability of everything. Let's define direct exchangeability of a certain good as "the number of owners who want a certain good/the number of all owners other than himself." This indicates the probability of a certain good being exchanged directly. In (1), direct exchangeability of the good *e* is 2/4 = 0.5, the highest among those five goods. This tells us that if you have the good *e*, there is a 50 % chance of directly exchanging with some other goods. The good *e*, thus, comes to have a new property, i.e., direct exchangeability with other goods, unlike its human utility based on its physical and chemical properties, for example, nutrition or warmth. A new want is created here: we may not need the good *e*, but we want to have it since it gives us higher direct exchangeability with something we want.

In (1), the owner of *d* wants *a*, but the owner of *a* wants *e* instead of *d*. A direct exchange cannot occur between *d* and *a*. From experience, however, the owner of *d* must learn this: "if I had *e*, I could directly exchange it with *a*, so by exchanging *d* with *e* and then *e* with *a*, I should be able to obtain *a* I want." We call the consecutive direct exchanges "indirect exchange." Now it is clear that *e* is used as a means to mediate the indirect exchange of *d*-*e*-*a*. Through such learning, each owner's wants might shift.

Thus, our wants for goods would be split between "direct wants" for usefulness or utility realized by consuming goods and the possibility of obtaining other things in exchange for goods, i.e., "indirect wants" toward the direct exchangeability of goods.

For example, the owner of a certain good not only "wants an arbitrary good he wishes to consume" but also "wants the good with the highest direct exchangeability among the goods around him" as an indirect want. Then, arrows among the goods will change as in Fig. 2.4 (2). At this point, the good *e* is wanted by all the owners and its direct exchangeability is 4/4 = 1.0. The direct exchangeability value

is the highest, as long as the owner does not want his own good. This is how "the general equivalent form of value" is developed, in which the good *e*, which has achieved the highest direct exchangeability, is the only form directly exchangeable with all other goods.

The owner of this good sits in a position of being able to directly exchange with all other goods. This position is not a property that comes equipped with *e* by birth like an heir to a throne. It is an acquired property that will emerge from within the system through the transition of a network like (1) born out of the situation where people want reciprocal direct exchange to and (2) where people's wants are split between direct and indirect wants.

The fact that a certain good has higher direct exchangeability at the initial point of (1) may not be a coincidence. Some usefulness or utility intrinsic to the good might have attracted more wants. In Japan, for example, rice has long been a staple. That may have led rice to its higher direct exchangeability. Gold is not just a beautiful and bright luxury, but it also has outstanding physical properties that make it good for money, such as resistance to corrosion or plasticity. This may underlie gold's high direct exchangeability. In this sense, a good's physical and chemical properties and the usefulness that stems from them have something to do with emergence of money.

After a while, when the owners of other goods than *e* have come to seek for "selling," that is, direct exchange with money *e*, and "buying," direct exchange between money *e* and other goods, all other forms of direct exchange will vanish and (2) will shift to (3). At this point, a good is split between being money and a commodity.

All other goods than *e* become commodities: the objects of trade with money. There are only two kinds of trade: exchanges between commodities and money or "sale" and exchanges between money and commodities or "purchase."

Imitation of Others' Wants Brings Money into Being

The generative theory of money we have discussed so far is often called "the commodity theory of money" since it is based on an assumption that money was originally a "commodity." It would be more appropriate, however, to see how a certain good turns into money while other goods become commodities; or we could rephrase this as proposing that they are divided into money and commodities simultaneously. There could not be commodity before money has come into being. These views might lead us to rephrase the theory as a "goods theory of money" or a "realist theory of money."

The above example rests on the idea that just one single money becomes stable. It's not always the case, however. We assumed that each owner follows the rule of indirect wants, by which he "wants the good with the highest direct exchangeability among the goods around him." We can also consider the case of a rule where he "wants the good with direct exchangeability at more than a given threshold." In this case, if the "threshold" is too high, money would never emerge, while the direct

exchangeability of many goods goes up and down, leading to an iteration of an unstable process if the threshold is too low. Some goods should keep emerging as money and then quickly disappear. If the threshold is within a certain range, a single or a limited number of goods would be wanted by many owners of goods, and their direct exchangeability would increase and then become stable at the maximum value. Consequently, the structure of (3) will emerge with a single money and other commodities.

Even in this case, however, the direct exchangeability of money can become unstable by accident. When fluctuation grows to a substantial degree, money will collapse. Although money comes into being under certain coincidental conditions, once it is accidentally established as money, it has to constantly reinforce its own structure as its main property. And money, which seems to be stable through a self-reinforcing process, could eventually collapse at some point through accidental fluctuations or the changing nature of people's wants.

In any case, the fact that people seek exchangeability drives them to imitate others' wants – "I want a good others want" – or to learn about wants that are dependent on others. This very shift in people's wants creates money as an unintended consequence.

In other words, the prerequisite for money's emergence is that human beings have flexible learning abilities. There is causality – (1) transitions to (2) in Fig. 2.4 – where change in one's wants (an internal rule) through learning creates money as an institution (an external rule), while there is opposite causality, in which the creation of money makes people's wants dependent on others, (2) transitions to (3). In this sense, people's wants or preferences as an "*inner institution*" and money as an "*outer institution*" shape the circular relationship in which both institutions mutually determines themselves. This loop is the very root of the self-organizing and evolutionary nature of money and it reveals the identity of the enigma of money.

A similar logic or structure often emerges in market economy. We can understand such phenomena as soaring stock prices and their collapse, the boom and bust of bubbles, the emergence and decline of best-selling brands drawing on the same logic of emergence, divergence and self-oganization found with money.

Accordingly, the self-organizing and evolutionary aspects of a market economy replicate the model of money.

The logic of the emergence and self-organization of money tells us that it already exists and is essential to any large-scale economy. It's not necessarily the case, however, that some particular money will survive permanently. Nor can we justify the existing money system in this way. Rather, the logic of the emergence and self-organization of money shows that it does not have to be singular and that money can change, diversify, collapse, and vanish.

Money as an institution does not only emerge spontaneously. We can also design the institution of money artificially. Nevertheless, since the structure and dynamics of money and human direct and indirect wants determine each other, forming circular structures that coevolve, the optimal system cannot be constructed all at once. It is rather evolutionary in the sense that we must try to fine-tune the money institution as an external rule through trial and error so as to attain a desirable direction.

In light of all the above, we can now realize that the vision of market in neoclassical economics, which preaches the market stays in a stable equilibrium with allocative efficiency, is based on a quite unrealistic logic that ignores the indispensable presence of money.

Diversity in Money

Goods with a high rate of saleability become more saleable in an accelerating manner and turn into money. Since Menger, this story has been told often in textbooks and commentaries. It is a well-constructed story, but it is too simplistic to conclude that a single money necessarily emerges.

We reinterpreted Menger's saleability as a good's "direct exchangeability" originating from Marx's *Capital* and argued that the distribution of a good's facility of direct exchange and its owner's rule of wants influence each other and consequently make a big difference to money's diversity and sustainability. Money and people are living in a dynamic coevolutionary ecosystem, so to speak.

Looked at from this perspective, it appears that the Mengerian emergence theory of money only describes the benefits of money as a convenient circulation tool. On the other hand, it neglects various downsides deriving from money – bubbles, crises, inequality of income and wealth, the worship of money, and the destruction of communities and the natural environment. If such a market economy is confused with an ideal of market fundamentalism – "the ideal free market without any regulations is a device to allocate various goods and services in the most efficient manner" – we end up with an unrealistically rosy picture.

If money and markets were such things, it would be difficult to object to the following utopian opinion:

> The market in our real world is far from an ideal one. But as computer technology develops, the ideal market will come to be some day using computers and the computer network. Then market economy will be perfect, allowing us to allocate goods and services on principles similar to those of barter. Eventually, money will be of no use.

But the notion that money will be replaced as a convenient tool by an even more convenient tool, an ideal market built with computers, is not feasible either. In the first place, the underlying view of money and markets is too one-dimensional. Money and markets are complicated things with many diverse aspects.

Negative Possibilities with Money

If money is regarded just as a means of circulation, it only mediates nominally and does not affect the state of the real economy in the form of business cycles or unemployment. Viewed from our reality, this can hardly be considered a plausible claim.

Money is not all about making commodity exchange easy. During a recession, for instance, people tend to hold money and refrain from buying commodities. The role of money as a "means of circulation" – all the commodities are sold for money and now the money can buy other necessary commodities – substantially shrinks. On the other hand, crisis panics and depression, which occur when nobody gives up money nor do they buy commodities, would still come around, with unemployment, bankruptcies, and all that. In this situation, money is the source of negative "possibilities."

"In the beginning was the money" – it is a warning against oversimplification widely observed in a modern economics based on "market without money." We need to be free from the conception that we can begin with a theory about market without money because money is nothing more than a convenient tool to make commodity exchange smooth. Then, we need to examine more carefully how money creates markets and then consider what benefits and downsides money can have.

Furthermore, we can now tackle the problem of institutional design for the first time – whether it is possible to change markets by changing money for the purpose of reducing its negative impacts – but only by assuming that "money creates market." Contemplating the institutional design of money allows us to discuss policy issues in our social economy from the standpoint of evolution or complexity.

2.5 Robinson Crusoe and Stone Money on Yap Island

The Story of Robinson Crusoe Tells How Hard It Is to Escape from Money

As we have seen, money, like language, is essential to forming economic society, not a tool to solve the inconvenience associated with barter. This is what "In the beginning was the money" means.

If the meaning is not clear, here are two stories as examples.

The first is the story of Robinson Crusoe. Robinson Crusoe is the protagonist in the novel written by Daniel Defoe in the eighteenth century. The story of Robinson Crusoe has often been used in economics to explain "what economy is."

Robinson ignores his father's advice and sets sail on the open seas, hoping to make a fortune. He is shipwrecked in a storm and lands on an uninhabited island. He somehow survives by himself and takes from the ship bread, rice, cheese, meats, liquor, and also some other necessities such as clothes, carpenter's tools, arms, ammunition, ink, paper, compass, shovel, needle, and thread. He starts living alone on the "Island of Despair." He says he could have been dead of despair without those things since life would have been more primitive.

Robinson builds a house with fences. He also makes a table and a chair. He goes out to hunt with a gun, catches goats and wild birds, and processes and stores them. He raises goats, sows seeds of wheat and barley, keeps birds out of the field, and

makes harvests. As a result of his improved living standards, he can accumulate stocks and concentrate on building a ship that takes months. He prays to God three times a day and even makes time to read the Bible.

Through trial and error, Robinson learns how important production, raising cattle, and farming are and how to allocate such limited resources as flotsam and his time. Even if he were to store more food than he can consume, it would go bad or get eaten by wild animals. Rather, he chooses to read the Bible and prays to be human.

When he finds European and Brazilian gold and silver coins in a wrecked ship one day, he says: "Useless objects, what use are you to me? Do you have any value to me now? You are not even worth picking up. Whatever amount you are, you are not comparable to this knife."

Nevertheless, somehow he takes them home, only to learn that they will become stained on a desert island. And he sees that they drive the appetite for accumulation in the civilized world. However, his subconscious conduct seems to imply a hope to return to civilized society and showing how hard it is to escape from money.

The novel is often interpreted ethically and religiously as portraying a reverent puritan figure. In Japan, Soseki Natsume described it as a moral novel of labor and non-idealistic realism, while Ogai Mori found a figure of independent man as a founder in the novel.

But there is another reason that economists like the story of Robinson Crusoe. They see a rational "economic man" in Robinson who tries to utilize limited resources as efficiently as possible.

An economist, Lionel Robbins of the London School of Economics, once defined economics in his *An Essay on the Nature and Significance of Economic Science* (1932) as "the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses." This is the most well-known definition of an economics based on scarcity. Once the "nature" of economy is defined as optimally allocating scarce resources to achieve a given objective, attention is directed to Robinson's rationality when facing the problem of how to allocate scarce resources optimally. The neoclassical idea that the price of a good is determined when its demand and supply meet and the price is positive as long as the good is scarce is given concrete form here. Also, an uninhabited island is a self-sufficient economy with no one else but Robinson. There is no need to exchange his goods with someone else's goods, and so it is a world where money is not necessary. This is the reason why neoclassical economists love the story of Robinson Crusoe on a desert island where there is no money.

Moreover, this is a world where classical economist David Ricardo's labor theory of value is made visible since the primary resource on this desert island is his own labor power. In other words, viewed from the perspective of reproducing necessities like food, the quantity of human labor necessary to reproduce goods shapes the value of goods. That's why Robinson, in order to combine leisure and goods to maximize his satisfaction, divides his twenty-four hour days between labor and leisure and learns from experience how to allocate his labor rationally for various

purposes. Thus, on Robinson's uninhabited island matters the rational allocation of resources and labor, whether seen in terms of scarcity or reproduction.

Economists of varied schools have discovered the nature of an economy in the story of Robinson and drew convenient doctrinal inferences for their own purposes. The essence of money and markets is completely overlooked as a result.

"Economy" Without a "Society"

The story of Robinson Crusoe did not end so simply as the economists thought. When he escaped from the island and returned to England, he sold the farm he owned in Brazil and received in exchange a bill equivalent to 32,800 Spanish gold coins. He never forgot that money was needed in a market economy where many people conduct trade, if not in a self-sufficient economy. The fact that Robinson unintentionally picked up money that was useless on the island hints at this.

We have mentioned that the establishment of markets presupposes money. Some may say that there was an "economy" even on Robinson's desert island where he alone lived a self-sufficient life, producing and consuming food, clothes, and housing. But there is no "society" where independent individuals trade in a division of labor. Unless there is a "society," "money" is not necessary and "markets" do not come into being.

Even if we extend the Robinson story to imagine an economy of "the Robinson family" in which a "family" of parents and children arrives and makes a living on an uninhabited island, the same thing applies. Domestic labor like cooking and laundry is not traded with money. It could be the case one day but not yet. This means there may be an "economy" in a family but no "markets." It shows that a family is still a community rather than a market. A family is a unified community where a couple and their children are organically combined. Members of a family are not independently separate individuals; they are naturally combined like the hand, leg, or head of a human body and are integral to each other's existence.

In human history, "markets" were established outside or between communities – for example, a city agora or a port of trade. In contrast, "economy" derives from "householding (*oikonomia*)" as part of managing family communities (*oikos*). It is interesting that the word "economy" was originally close to "management."

Markets, especially foreign trade, were conducted between communities because people were afraid that the market principle would destroy other principles like the gift and reciprocity and communities would eventually collapse. The Edo shogunate did not completely ban foreign trade with China, Portugal, and the Netherlands but created a small artificial island called Dejima specifically for foreign merchants, attempting to confine the market principle to a small area. They recognized that their feudal society with its four occupations (samurai warriors, peasant farmers, artisans and craftsmen, and merchants) could be undermined from the outside by the destructive power of markets.

Stone Money on Yap Island

The other story about money is not from imaginary desert island but concerns a strange form of money that exists on a real island where people live now.

On Yap island on the western tip of the Caroline islands in Micronesia, large stone money is still used. The island is located southwest of Guam and Saipan which are known as resort destinations and east of the Philippines. Since there was no metal on the island, stone was used as a primary resource and applied to various things. This made stone a likely material for money.

The stone money on Yap island is called *fei* shaped like a wheel. The residents of the island carve out limestone and make *fei* on Palau, which is 400 km away. They carry them suspended from the canoe or boat under the water. Stone monies vary in size from 30 cm to 4 m. There is a hole in the middle and carrying a large one requires several people holding a log put through the hole. It is reminiscent of TV animations about primitive men. *Fei* are primarily used as presents for rituals such as weddings, remuneration for housing construction, and also conflict solution.

Large *fei* cannot be carried easily. They are left out on the streets or in gardens. No one steals them, since it's a small island. A new owner of *fei* may leave it in the previous owner's property. There is a "stone money bank" where many *fei* are left in a park. The point is that others recognize the money belongs to you. Their value varies not just by size but also according to the sailing legend or history that the money carries with it.

An anecdote demonstrates the mysterious character of *fei*.

The largest *fei* on the island belongs to a family. Although all the people on the island know that, no one has actually seen the money. It's like a ghost story, but the story has been told from generation to generation.

When the ancestors of the family today were carrying an enormous *fei*, they faced a storm at sea. In order to protect their own lives, they had no choice but to cut the rope tied to the money. Back on Yap island, they told everyone how large the money was and that it had to be abandoned in the sea. People on the island accepted the story. Since it was processed as *fei*, it wouldn't be any different if it were left on their residential property. The huge *fei* left on the bottom of a sea only exists in oral tradition. Nevertheless, it is still accepted as an asset and its purchasing power is good today.

Anything Can Be Money

What does the story tell us about money? First of all, *fei* is a symbol of economic and social wealth for a particular purpose rather than as a general means of exchange. It is also a symbol of the honor and dignity of those who attempted to process and carry it. Even if it is inconvenient to carry it around and has no practical value, as long as everyone believes in the legend, it circulates as money.

The legend suggests that it does not matter at all what the money really is. If it can be good as money in the bottom of a sea, the material of *fei* does not have to be stone. It can be said to be an "idea" in the sense that a "thing" at the bottom of a sea which no one can actually see or touch can be money as long as people believe in it.

Money, at some point, can be a luxurious product, a staple food, or a precious metal. What money is depends on the social values based on custom and tradition in a certain society. To put it more simply, it is determined by what people in a society believe it to be money. For the people on the Yap island, *fei* left on the bottom of a sea is money. For us who don't believe the legend, it is not money.

Anything can be the material of money. But that does not solve the question of what money is.

Remember, we who live in a civilized society also accept every day a "thing" as money whose material has no value. Yes, that's a Japanese banknote inscribed as "ten thousand yen." A piece of paper, which only costs a bit less than 20 yen to issue, is circulated as a "thing" with the value of ten thousand yen.

Money is not just a physical "good." It is a social "event," an integral "event," supported by custom and tradition, beliefs, and ideas. Like *fei* on Yap island, some money was only accepted as a symbol of wealth and honor inside a certain community and used for trade in particular goods and services. Money is not merely a "thing" but takes material form as an "event," where it works as information to express social relations between people.

Chapter 3
Money as "The Self-Fulfillment of an Idea": The Difference Between a Bank of Japan Note and Bitcoin

3.1 Why Talk About Money Leads Us into a Circular Logic

Four Functions of Money

We have seen that anything could be money, that a wrong understanding of markets has been widespread because mainstream economics has neglected money, and that money is not a convenient tool for the market, but rather that money creates markets (in the beginning was the money). We have examined the various characteristics of money, but have almost never talked about the money we actually use today. Now, by focusing on our current money from the ten thousand yen bill issued by the Bank of Japan to Bitcoin, we will approach the enigma of money.

Let's begin by summarizing the functions of money.

According to economics, the functions of money are believed to be (1) a means of exchange/circulation, (2) a measure of value/means of purchase, (3) a store of value/hoard, and (4) a means of payment:

(1) Money as a means of exchange: When barter cannot be conducted and it is used in buying and selling, money becomes a "means of exchange." Money thus circulates among many economic subjects. Thus it is also called a "means of circulation." Money circulated repeatedly is also called "currency."
(2) Money as a measure of value: Money indicates the "price" of a commodity by units on a single scale, e.g., "an apple = 100 yen" or "a kilo of beef = 1,000 yen." This function of money is called "a measure of value." In the above equations, to show we can buy commodities like apple or beef with money, the commodity is on the left side, and the unit price of the commodity measured in the amount of money "yen" is on the right side. This means that money is a "means of purchase (purchasing power)" that can buy any commodities. We can obtain an apple or some beef by paying the commodity's value with money, but we cannot obtain money by handing out an apple or some. The above equations can be rewritten as "1 yen = an apple/100" and "1 yen = some beef/1,000 kilo."

M. Nishibe, *The Enigma of Money*, DOI 10.1007/978-981-10-1819-0_3

Nevertheless, commodities like apples or beef are not measure of value. Therefore, these are not an expression of value.

(3) Money as a store of value: Money, while its value is stable, functions as a "store of value" for saving or in anticipation of unexpected economic developments or accident. Money, like gold which has intrinsic value by itself, functions as an independent "hoard." But fiat money or e-money, which has little value by itself, functions as a "hoard" as long as it functions as a means of exchange or measure of value, but it may not be reliable in the long term since there is a risk of it being hit by hyperinflation, when the value of money quickly diminishes.

(4) Money as a means of payment: Suppose there is a contract where the seller of a commodity allows a buyer to purchase it on credit and pay after a grace period, and a buyer will pay money and interest on the due date. In this case, money used to settle the contract is a "means of payment." "Credit" of this kind has been developed as a way to save money. Once "credit" is established, when a buyer is a business, they can pay with a commercial bill. Banknotes and deposit currency are called "credit money." This is because they have been developed as a "means of payment."

The development of "credit" paved the way to the possibility of trading commodities on a larger scale than the use of money alone permits. It also created the possibility of a repeated tragedy of booms and recessions in business cycles or of bubble and bust.

The Differences Between Money and Commodities

The most important function among those four is usually identified as the "means of exchange/circulation." As we have seen, money is often said to have emerged to get rid of the inconvenience of barter. This is because money is believed to be, among other things, a tool to make exchange between commodities easy, i.e., a means of exchange. If money is nothing more than a middleman, it may be easily understood that any material will do. As long as we can obtain a good suitable as a tool, money does not have to be gold or silver; it can be paper or an electronic signal.

This interpretation, however, would lead us to overlook the following enigma of money. A long time ago, there was a TV commercial that said: "you can buy a bag of chips by Calbee for 100 yen but you cannot buy 100 yen with a bag of chips." Put more generally, you can buy anything at a department or convenience store as long as you have the money; but you cannot buy money with whatever thing you bring to a bank.

You may say it's obvious; but this really points us to the essence of money. You can go ask a clerk at a department store "I've brought rice instead of money today, can I buy that handbag with rice?" You might be politely declined or kicked out of the store by a security guard.

Anything could be money means the material of money could be anything. It does not mean anything could be accepted as money.

As we saw above, the value expression of a commodity is "an apple = 100 yen"; it cannot be "100 yen = an apple." We can buy an apple for 100 yen but cannot buy

100 yen with an apple. The reason is that money has the function of "measure of value/means of purchase," while a commodity does not.

Money as the Emperor

As we saw when discussing the logic of a generative theory of money, money has the power to buy a good by itself, namely, "purchasing power." A good, on the other hand, has no power to buy other goods or money. Considering the relationship between money and a good, money can be compared to an omnipotent emperor and the good to a servant who obeys the emperor.

When we go to a department store, clerks bow to us. They bow not to us, but to money we have. A clerk, who is a good, bows to you as money. This is how the purchasing power of money is revealed. Accordingly, it would reflect money's essence more correctly to regard it as a presence like an emperor with strong authority to buy (or not to buy) goods rather than a mediator to smooth out exchange between goods.

It would be more accurate to consider money to be a collection of purchasing power with monopolistic authority, i.e., "measure of value/means of purchase" rather than "means of exchange/means of circulation."

Talk About Money Quickly Ends Up in a Circular Logic

If we say money is a tool for the exchange of goods, it does not sound so superior or important. But in reality, money is superior and goods are not. Otherwise, we cannot explain why everyone seeks money. Why is money so popular? Why is money so superior?

Once we start thinking like this, we realize that we have come back to the starting point. Money is popular or superior not because it is shining, cool, and precious or because of the inherent properties of its material.

As we have repeatedly shown, any properties of a material could make it money. Money has purchasing power to buy goods. That is because everyone wants money. Why does everyone want money? It is because money has purchasing power. This looks like a kind of "circular logic." It appears that we are lost in the labyrinth of money once again.

3.2 Thinking About Money Through "The Emperor's New Clothes"

A Ten Thousand Yen Bill as a Self-Fulfilling Idea

Let's begin with a Japanese banknote, money familiar to anyone. A Japanese banknote is fiat money. It is not convertible to any valuables. A Japanese banknote is manufactured by the Printing Bureau of the Ministry of Finance. The cost of

manufacturing a ten thousand yen bill is a little short of 20 yen. There is not much real value in it. Why does fiat money circulate as a ten thousand yen bill despite how little value is embodied in it as a good?

We have said "everyone wants money because money has purchasing power." More accurately, we should say "everyone wants money because everyone believes or expects money has purchasing power." For short, it should be like this: "money is superior because everyone believes money is superior." If we apply this to natural phenomena, it sounds more like an unscientific or occult story. For example: "an earthquake occurs because everyone believes the earthquake occurs."

In social phenomena, however, it is not unusual for what everyone believes to come true, thanks to the power of the idea itself. If everyone believes the economy will get better, businesses expect stronger consumption and invest, and consumers spend more because they expect price increases. Consequently, the economy does indeed get better.

A more obvious example is the stock market. If a certain company is expected to become profitable, people will buy the company's stock, and the stock price will increase accordingly. But the same thing can happen even without any good reasons for profit. Let's consider a case where rumor has some investors trying to drive a certain business's stock price in a particular direction in order to make money. If they expect that many people will believe the rumor and the stock price will increase, those people will buy the stock, making the stock price actually go higher. Then those who watch it will also buy the stock. It is possible that the business's stock price will soar this way. Of course the stock price will collapse when everyone starts taking their profits.

Many people may think the same way and move in the same direction altogether. As a result, an idea fulfills itself; even an unrealistic idea fulfills itself. Let's call it a self-fulfilling idea. This is one of the causes for booms and busts to happen, thereby making the economy unstable. We will discuss this later.

Self-fulfilling ideas are all around us. Our society could not exist without them. Money as a means of purchase is also supported by self-fulfilling ideas.

Money and the Story of "Emperor's New Clothes"

Let's go back to the story of the ten thousand yen bill. Why does fiat money with little value as a good circulate as a ten thousand yen bill? The key to this enigma is found in "The Emperor's New Clothes" by Hans Christian Andersen. It is a well-known story, but the fairy-tale version is for kids. We will briefly review the original story.

A vain emperor hears about clothes that are not only the world's most beautiful but invisible to fools and people of low rank. The emperor let them make the clothes for him. He sends the minister who is the most honest and of the highest rank to see how they are getting on. The minister returns and reports to the emperor that the clothes were "marvelous." Now the emperor himself goes to see them. The emperor

did not see the clothes but he did not want to admit that he was a fool or a person of low rank himself. The emperor said loud "great, I like them."

Upon completion of the clothes, the emperor decided to march through the city with the new clothes on. No one could say the emperor is wearing nothing. But one child laughs and says "the emperor is wearing nothing." This spreads through the crowd and eventually everyone shouts "the emperor has no clothes." Nevertheless, the emperor does not stop the marching and marches confidently through the city.

The story is often remembered for teaching that an honest child can better see the truth than adults. But the core of the story lies elsewhere.

The Emperor Is Great, Even If He Is Wearing Nothing

No matter what he wears, the emperor is great to his servants and the crowd. They cannot laugh at him, for they could be charged for lèse majesté and sent to prison. Some may think it better to behave as though the emperor wore the clothes, even if it is not true. Also, if you say you cannot see the clothes, you are showing yourself up as a fool and a person of low rank, which you do not wish to do. These considerations also apply to the emperor himself.

By believing or pretending to believe that something is there even though there is nothing, the "reality" would self-emerge as if there was something. Strangely enough, self-fulfilling ideas occur even in these circumstances.

There is no single reason why people cannot say "the emperor is wearing nothing"; there are a number of reasons. As a result "the naked emperor" is a strong and solid one as a self-fulfilling idea.

As we will see below, this applies to fiat money. There is no difference between how the emperor's invisible clothes were accepted as great and how fiat money with no money in itself circulates as money.

Access Gift and a Ten Thousand Yen Bill

We have mentioned the electronic bazaar of 20 years ago. In Nifty Serve's bazaar back then, a sort of alternative to money was circulated. It was a right to use the computer net called the "access gift." At one point, the "access gift" was used as payment for products sold (it was prohibited by the user's agreement later).

The "access gift" worked as follows: Accessing Nifty Serve cost a fee on top of the phone charge. The "access gift" was usable for payment of the fee and it was also given to other net users as a gift. The sender of the "access gift" only inputs the ID of the receiver and the amount he is going to give. It came in three different amounts: 1,000 yen, 3,000 yen, and 5,000 yen. One can send this repeatedly, and the total amount could be large. A sender is limited to members who pay the charge

with a credit card, and the payment of the "access gift" was settled on the credit card together with the net fee.

In negotiating trade conditions in Nifty Serve's electronic bazaar, if both parties agree over the payment by the "access gift" (some sellers specifically mentioned up front "access gift payment accepted" in their messages), the payment was easy without having to go through the cumbersome process of a wire transfer or cash on delivery.

The "access gift" was originally invented as a gift and was nothing more than a gift certificate (prepaid card) granting the right to use Nifty Serve's computer net. With extensive use by members, however, it came to have a different meaning when it began circulating in the electronic bazaar.

In the electronic bazaar, a seller who accepts the "access gift" in return for the product she is selling does so because she believes that she can use it when she pays Nifty Serve's access fee in the future. But that's not all. Some may accept it, expecting a seller will accept it in return for products when they buy something in the future. There is a chance that they accept the "access gift" as "money" that can buy something. If they can expect third parties to accept it as a form of payment in the future – if they can expect third parties to accept it as money – there is an incentive to accept it now. If the "access gift" is used as payment and it is possible for it to be transferred to third parties, the "access gift" of a mere electronic signal functions as a "virtual money" in the electronic bazaar. Thus, the electronic bazaar in Nifty Serve gave birth to an "access gift" money unique to the markets.

The "access gift" was probably far ahead of its time compared with currently available advanced electronic monies like "Suica" or "Edy." In the case of such electronic monies, you can only charge "value" with cash, by which you can buy and consume goods and services. "Value" is not only non-exchangeable for cash but also untransferable to other individuals. Unlike the "access gift," the "value" of electronic money is not as money to be transferred in payment for a purchase or to circulate from someone's hand to another's. The "access gift" is much closer to a Japanese banknote than cash, even though it only circulates in Nifty Serve's electronic bazaar.

On reflection, there is no enough reason behind the "access gift" being accepted as a virtual currency. It is justified only if a vague prediction about the future – "some other person will accept it" – is correct. Therefore, if the chain of predictions collapses by any chance, the virtual currency will also vanish. When the day comes that no one accepts the "access gift," there is no other way but to use "access gift" for yourself. Also, if Nifty Serve discontinues its service, "access gift" will become a useless electronic signal on computers. Indeed, on June 3, 2006, Nifty Serve decided to discontinue all their services although they once had more than 2 million members in the first days in the Internet.

I did not bring up "access gift" as a fiction; we practice something similar on a daily basis. Yes, it is the ten thousand yen bill.

In economic phenomena, if we accept something, we are predicting that someone else will accept it in the future. It is normal for us to do something because others do. You may want to wear clothing of a luxurious brand because your friend does. Everyone buys stocks, so you buy stocks in order not to be behind them. "You won't

fail if you follow others." "There is no need to fear crossing a red light if everyone else does." This pattern of behavior seems to be intrinsic to the human mind.

The same is true of a ten thousand yen bill. We do not accept such a bill because it has the value of ten thousand yen. Most people don't ask if the bill has that value. Maybe they don't even care if it is real or fake. They likely think they can use it since everyone else uses it or they believe they can use it today because it worked yesterday.

There is no difference between a ten thousand yen bill and the "access gift" in the sense that we accept them because we believe, perhaps unconsciously, that there are people out there willing to accept them for commodities. Let's examine the logic of this further.

The Self-Fulfillment of Custom

According to the Bank of Japan Act, "the banknotes issued by the Bank of Japan shall be legal tender and hence shall be used for payment without limit." The banknotes are "legal tender" guaranteed by the laws of Japan. It is as great a thing as the emperor backed by state power. If you refuse to accept a ten thousand bill in Japan claiming it is not money but a piece of paper, you could be punished for breaking the law.

So, do people accept the bill because it is backed by legal power? Probably this is too narrow an explanation. It is wrong to assume that you can force people to do something by law and the threat of punishment. Generally speaking, law can prevent crime and illegal activities by forbidding them, but it cannot force people to do something in particular. The law can punish someone who goes against it, but it cannot provide a positive incentive when someone conforms to it. Therefore, there must be benefits for individuals who accept the ten thousand bill apart from state power and the law.

The minister and the crowd thought, but did not say "the emperor has no clothes," not because they were afraid of the emperor's power, but because they thought it better for themselves. Likewise, as long as banknotes circulate in reality, there must be benefits to accepting banknotes which have no value in themselves and cannot be exchanged with anything else.

What then are the benefits?

First, since Japanese banknotes have been accepted by everyone until yesterday, they should be accepted today as well. We do not have to think too much about whether they are good today or tomorrow, so we can save ourselves the effort of even thinking about it. Most of us usually have lots of issues we need to spend time on, rather than bother with whether we should accept Japanese banknotes, such as how to make money and spend it or how to make more money.

If we think too much about everything, our life would come to an end before we did anything. As a matter of fact, in our daily lives, we usually assume that the same things will happen next time round.

When we make an appointment with someone, for example, we assume she will show up since last time she came as promised. When we go out in a car, because there was no problem with the car before yesterday, we assume it will be okay today as well. There are many examples like this around us. We make these judgments as a matter of custom. In doing so, however, we are able to behave and act regularly without thinking too much.

When many people act or behave out of custom, a kind of stable order, convention, emerges spontaneously in a society, which will provide a framework for social activities. Our thinking is constrained and society becomes stable.

So, by believing that the world will be the same today and tomorrow, continuous with the past, self-fulfilling ideas become self-fulfilling custom.

Believing and acting in a stationary state is not absurd in our world where time flows in one direction from the past to the present and the present to the future, but not vice versa. It is much better than wasting time all day thinking and suspecting the worst. We can live like this, except in unusual situations, as long as there is stationary state in our world and it continues to be so.

Let's suppose we live our lives believing a big earthquake won't happen. It should not be a problem because a big earthquake doesn't occur every day, except the day when a big one hits every once in a few decades. Unless it is possible to predict accurately when a big earthquake will happen, we would have to bear a huge cost expecting an earthquake and trying to predict its occurrence in the long term.

While such customary thinking is normal for most of us, business people rely on it less than the rest of us. Even if there are minor changes between yesterday and today, by acting as if each day is like any other day, we contribute to a regular state of society and economy.

The Self-Fulfillment of Expectations

Those who think rationally rather than through custom may find that such a way of thinking lacks rationality. Economists, among others, would insist so. But they also might think as follows: "I don't recognize any value in Japanese banknotes. I don't believe they will be accepted today just because they were yesterday. However, even if a ten thousand yen bill is just a piece of paper with no value, it makes sense to accept it as long as we can expect someone else to accept it as a ten thousand yen bill." "If I can pass it on to someone else, the joker won't lose me anything. If the person I give the bill to is rational enough like me, he should find it ok to accept the bill. And the person following that person, and also the person following the one following him should think the same way. If this continues indefinitely, everyone should accept the bill. Therefore, I will accept it."

The rational person, therefore, should accept Japanese banknotes if he is patient enough to repeat the thought experiment indefinitely expecting the person following the person following…to do the same thing. This allows us to think of the future as

eternally unchanging before coming back to the present. According to this logic, self-fulfilling ideas become self-fulfilling expectations.

However, if the thought experiment of the person following the person following the person and so on repeats itself only finitely, a different outcome will emerge. In an indefinite thought experiment, there will be "someone" who accepts the joker in the eternal future, while a finite thought experiment will have the expectation that the person before the last person in the future won't accept the bill because the person expects the last person will never accept it and the person following the person will do in the same way. The logic comes back to the present and this person won't accept it either.

Those whose expectations are based on rational thinking accept Japanese banknotes by introducing the idea of infinitely long thought experiments which even a computer cannot execute. They thus barely deny the possibility that there will be no one to accept the bill in the indefinite future. It is possible because of, so to speak, ignorance of "infinity" beyond human rationality.

Paradoxically, rational thinking can justify accepting Japanese banknotes owing to irrationality in the name of "infinity." This is typically true of business people, investors, or speculators. Those who have rational expectations of the future may become extremely sensitive to a slightest change in the present since it might cause growing anxiety over the future. If the anxiety expands beyond a ceratain threshold, they would encounter the present on the basis of a premise of a finite future. They then would shift to the inverse rational expectation and stop accepting Japanese banknotes that they had previously accepted by way of self-fulfilling expectations. In this sense, rational expectations of the future amplify small changes or fluctuations and bring about economic instability by destroying the stationarity of reality.

Reality Is Strong When Built by Custom and Expectations

Self-fulfilling ideas emerge as a synthetic effect of self-fulfilling custom and expectations. Japanese banknotes are accepted either because of ordinary people's self-fulfilling custom or because of investors' self-fulfilling expectations. Therefore, the "reality" formed through self-fulfilling ideas, a combination of self-fulfilling custom and expectations, is actually very strong and solid.

As long as the stabilizing effect of self-fulfilling custom is dominant, even if investors' self-fulfilling expectations in response to minor changes or fluctuations work to destabilize the economy, the stationarity of reality won't easily collapse.

So even if you shout "a Japanese banknote is nothing more than a piece of paper" just like the child who claimed "the emperor is wearing nothing," the banknote won't lose value or stop circulating. Others may shout it more loudly, but as long as most people stay the same, nothing will change.

The emperor does not go naked because one ingenuous child yells. Each person there finds it individually strange but is unwilling to speak up, wondering what everyone else thinks. It is a situation triggered by a child where everyone finds that no one else sees the clothes either, leading to the climax of the story. That is how the emperor becomes really naked.

"The Emperor's New Clothes" does not tell us how the child's claim that "the emperor is wearing nothing" might spread beyond a threshold level. Only if sufficiently many shout out loud that "Japanese banknotes have no value," the structure of a strong self-fulfilling idea could break.

How might we envisage from the perspective of these two different forms of self-fulfillment – custom and expectations – that a structure of self-fulfilling ideas might collapse?

Most ordinary people believe that the great emperor wears them, so the "invisible clothes" must exist. This is the essence of self-fulfilling custom. Some other cunning people know that the emperor is wearing nothing, but they think it is better for them to believe in the clothes, as long as many people appear to believe in them. This is the self-fulfillment of expectations. Thus the idea was self-fulfilled and the emperor marched on.

As an honest child's shout (a small fluctuation) ripples through a crowd, however, the self-fulfilling expectations of those who pretend to believe in the "invisible clothes" start to crack and eventually collapse. Then the supposedly solid self-fulfilling custom that ordinary people live by also starts breaking beyond a threshold limit. The destabilizing effect of self-fulfilling expectations starts to work with fluctuations; and when it exceeds the stabilizing effect of self-fulfilling custom, the entire self-fulfilling idea will be destroyed.

If the same thing happened to Japanese banknotes, they would lose value significantly and could stop being accepted. A significant decrease in the value of money is called "hyperinflation," when prices soar. But even if hyperinflation occurs with a single national currency like the yen, it won't lead to the collapse of money in general.

People would seek other forms of money than yen – world currencies like the dollar or an alternative money like gold or rice – or new kinds of money, e-money such as Bitcoin or community currencies. Market economy cannot exist without money. In other words, a given self-fulfilling idea may collapse, but another version will emerge.

Remember, the emperor continued to march majestically even after the child pointed out aloud that he was wearing nothing and the crowd responded to it. It seems that another form of self-fulfilling idea, sovereignty, has just survived.

3.3 *Yenten* as Pseudo-money

The Yenten *Incident*

Money, presupposing the existence of law and the state, circulates not because of their compelling legal force, but because it is supported by self-fulfilling ideas.

If so, money should come into being by way of a different "self-fulfilling idea" from social custom or rational prediction.

Looking at how such new monies as *Yenten* and Bitcoin were created (and then vanished) offers great insight into the "self-fulfillment of an idea."

Here we will look into two virtual currencies: *Yenten* (also known as Enten, a pseudo-money brought about by large-scale fraud) and Bitcoin.

Yenten was a pseudo-money issued by a health product company called L&G. It took the form of points like electronic money and was payable with a cell phone. L&G, which started issuing *Yenten* in 2001, promised besides guaranteeing principal to "pay 90,000 yen every 3 months (the equivalent of 36 % per year) for every deposit of one million yen" to anyone enrolled as a member and eventually collected a large amount of funds (deposits) in the name of cooperation. It is reported that over 100 billion yen was collected from 50 thousand people across the country.

But after the company's financial condition worsened around January 2007, they suddenly switched the members' dividends from yen to *Yenten* and also allowed members to receive the same amount of *Yenten* as yen every year (100 % premium). In fall 2007, they withheld dividends in *Yenten* as well and many members asked for a repayment of funds. In October 2007, L&G was investigated for violating the law concerning Regulation of Receiving of Capital Subscriptions/Deposits and Interest on Deposits – the way investment and interest rates are regulated – and eventually they declared bankruptcy. In February 2009, Kazutsugi Nami, the company's chairman, was arrested on suspicion of violating the law punishing organized crime (organized fraud) and was sentenced to 18 years in prison in 2012. This attracted a lot of attention like the Toyota Shoji incident in 1985.

Yenten *as a Ponzi Scheme*

Despite the fact that *Yenten* was a pseudo-currency unlike yen, L&G expanded its membership and funds by giving *Yenten* the "illusion" of having a value equivalent to yen. They set up a sale space called "*Yenten* shijo (market)" in high-end hotels across the nation including the Ginza area, where members could buy a wide range of things from food to luxurious items like jewelry in *Yenten*. They tried in this way to show them that *Yenten* functioned as a "means of exchange." In addition, the investment principal was guaranteed, and members were supposed to receive a "dividend" in *Yenten* equivalent to 100 % per year. It seems there are no finding negative aspects with *Yenten*. They also held free concerts for members, inviting well-known Japanese folk song singers. They tried to make L&G and *Yenten* appear more reliable by making use of celebrities.

Anyone with a bit of suspicion might think "it looks too good to be true and it cannot last for long." Yet surprisingly, more than fifty thousand people joined and put in their money.

The essence of the *Yenten* incident is simple enough: L&G's fraudulent enterprise was a "Ponzi scheme," they overissued *Yenten*, the planned dividend system broke down, and they could not return the funds.

A Ponzi scheme is a method of a fraud invented first in the United States by Charles Ponzi back in the 1910s and 1920s. It promises to pay dividends on any

principal put up front, but actually pays these dividends using funds supplied by other members, pretending that the dividends are based on investment income. The scheme will break down unless investment funds keep increasing enough to provide total dividends.

A pyramid scheme creates a layered organization of members, and those at the top receive a share of the money contributed by the members lower down as dividends. In theory, incoming money continues to multiply indefinitely as long as existing members recruit new members acceleratingly. This is prohibited in Japan by an Act against Prevention of Pyramid Sales.

L&G, while not using an illegal pyramid scheme but a Ponzi scheme, added a twist of pseudo-currency, *Yenten*, to its fraudulent investment system. We will return to this later.

How could fifty thousand people be tricked by the illusion of creating indefinite dividends out of a certain amount of money (which were not paid in yen, a legal tender, but in *Yenten* points with some purchasing power)?

The *Yenten* incident was a simple investment fraud. But the largest factor enabling this large-scale fraud to happen was the "illusion" that "*Yenten* was money that could buy anything," for indeed people could buy many different things with *Yenten* in the *Yenten* market. The illusion was reinforced by a "self-fulfilling idea." That is how the *Yenten* incident came about.

The logic of "self-fulfilling ideas" at work here is not the "self-fulfillment of expectations" that rationally expects some future consequence for *Yenten* but the "self-fulfillment of custom" that leads people to believe they could use *Yenten* for shopping since they were able to use it in the way so far.

Pseudo-Money by Means of a "Prepaid Payment Instrument"

Another interesting fact about the *Yenten* incident is that it was legally treated as fraud case rather than violating the Law Concerning the Regulation of Receiving of Capital Subscription/Deposits and Interest on Deposits/the regulation for investment and money rates. Why did L&G pay dividends in *Yenten*? Of course, they did not have the money for it. But they seem to have had the intention of erasing the illegality of the scheme eventually.

Legally speaking, *Yenten* is not a currency, of course. It is a "pseudo-currency" like gift certificates and electronic money (IC-card type, network type). Legally, it is a "prepaid payment instrument" stipulated by the Payment Services Act of 2009. It is particularly called a "prepaid payment instrument for one's own business," where only issuers can offer goods and services. When the unused balance of prepaid payment instruments as of record dates (end of March and September each year) is over 10 million yen, more than half of the balance must be deposited. If L&G did not meet the deposit obligation, it should be in violation of the Payment Services Act.

It is reported that prosecutors initially started investigation on suspicion of violating the Law Concerning the Regulation of Receiving of Capital Subscription/Deposits and Interest on Deposits. This law stipulates and prohibits "collection of

money from an unspecified large number of people by promising to repay." L&G promised to pay 100 % equivalent of collected funds in *Yenten* and eventually to repay the initial fund in yen. So the *Yenten* case appears to be violating the Law Concerning the Regulation of Receiving of Capital Subscription/Deposits and Interest on Deposits by promising to guarantee principal.

Probably the discussion centered on whether the initial fund collected from members was considered to be an "investment." L&G promised to pay "dividends" in *Yenten* equal to the amount of initial "investment." But from the legal perspective, would the "dividend" in a pseudo-currency *Yenten* be considered to be "dividends" or "interest"? If not, their conduct would not constitute the "collection of money … by promising to repay." After all, members did not invest, but continued to buy every year a prepaid payment instrument in yen. In so doing, however, they were not allowed to mention investment or guaranteed principal, although these were the fraudulent stakes.

After all, they could not charge for violation of the Law Concerning the Regulation of Receiving of Capital Subscription/Deposits and Interest on Deposits. The chairman Kazutsugi Nami is reported to have bragged that he could not be arrested. L&G deliberately tried to avoid legal prohibitions by using a nonlegal tender, *Yenten*.

Yenten exchanged with yen on a 1:1 basis, and members could buy goods in the *Yenten* market whose prices were indicated in yen. L&G must have needed yen to buy those goods. The system, in which members receive the same amount of *Yenten* as the yen they put in every year, must collapse unless new members' additional funds can cover the amount of money in yen needed to buy the goods they sell in the *Yenten* market. Given the annual dividend rate of 100 % (*Yenten*) for initial funds (yen) put up by members, the number of new members must continue to grow by more than 100 % every year in order to maintain the system. It may be possible for a few years. In that sense, *Yenten* is a Ponzi scheme. But it is a more complicated crime since it resembles multilevel marketing of financials or goods more than a pyramid scheme. But it was not considered to be a crime of multilevel marketing or a pyramid scheme. The Act on Prevention of Pyramid Sales in Japan prohibits a pyramid scheme, regarding it as something whose "nature means it must eventually collapse." In L&G's Ponzi scheme, while the amount of *Yenten* increases by 100 % each year, yen do not increase at the same rate. Thus, it is not an indefinite pyramid scheme.

In any case, the "self-fulfillment of custom" that we associate with money or pseudo-currencies works to stabilize our daily life and society in general, but it can also be employed for fraudulent schemes taking advantage of herd mentality.

Penny Auction

While not based on a pseudo-currency like *Yenten*, a similar fraud took advantage of auctions on the Internet. Ordinary auctions like "Yahoo!", although they sometimes take membership fees, they do not expect transaction fees for each bid. But Penny

Auction, which was charged for a fraud in 2012, took a small transaction fee from the bidding (tens of yen per transaction).

The penny (pence in plural) is the smallest denomination of the British pound. The bidding price here started at a penny or 1 yen in Japan. Penny Auction made a big launch, saying we can buy computers or electronic products at extremely low prices. But there was some doubt that it was also set up to not buy at all while taking bidding fees. Some, having seen a large liquid crystal TV won for one tenth of the market price, bid themselves only to lose tens of thousands yen in bidding fees. Still, TV celebrities mentioned in their blogs that they had won for an extra low price, so many thought it was just their own bad luck. But these stories turned out to have been made up: People said they had bought when they did not. The fact is that they were all deceived. An automatic bidding program called a "bot" was set to maximize bidding fees, and customers were not able to buy most products at low prices.

Like *Yenten*, deception was based on using TV celebrities. Although both *Yenten* and Penny Auction were just cheap schemes, they took advantage of people's desire for money. The power of the "self-fulfilling idea" of money also drives schemes like these.

The TV personalities themselves, who were employed as ad-towers for both cases, are "self-fulfilled" by the power of people's ideas and created by being worshipped (idolized) just like money. Those two cases show how strong the fulfilling power of an "idea" can be even in a complex diversified society.

3.4 What Does Bitcoin Tell Us?

Bitcoin: A Crypto-currency

"Bitcoin" is a networked virtual currency that appeared on the Internet in May 2009. (Its currency unit is known as BTC.) It allows us to settle transactions anonymously with anyone at a low cost. It's called "coin" but is only made of bits, electronic information. Nevertheless, because of its anonymity, it works like cash. It was probably named this way because it needs to be mined with a lot of work like gold or silver.

Bitcoin attracted attention during the Cyprus financial crisis of March 2013. A large body of savings belonging to Cyprus nationals and Russians then hoarded in Cyprus as a tax haven were converted to Bitcoin. The price of Bitcoins, which was then below $10, jumped to over $200 in April. In addition, wealthy Chinese who were concerned about the Chinese yuan bought into Bitcoin. In December, the People's Bank of China banned Bitcoin. The price had reached $1000 at that point, but soon fell. Bitcoin was designed to have stable value like "gold" and money fled into it because of concerns about state currency.

What makes this currency unique is its particular way of issuing and transacting money. Japanese yen, a legal tender, is issued and managed by Japan's central bank. Bitcoin has no equivalent central organization.

E-money in an open network usually uses “electronic signatures” backed by encryption technology called a “public key crypto-system.” In order to guarantee the owner of an encryption key used for electronic signature, a reliable third party organization is needed to issue and “authenticate” “electronic certificates.” Bitcoin, in contrast, issues and settles in a distributed manner, using a P2P network without authentication by a third party organization. Instead of a central organization, millions of computers all over the world install a software called “Bitcoin-Qt” to communicate with each other, thereby building P2P network. Bitcoin constantly renews data on transaction histories using massive computing capacity supported by distributed computers as well as encryption technology.

So how does Bitcoin issue and manage money in a distributed manner? It is by a particular way called mining. Anyone with a computer and mining software (“miner”) can do it.

It works like this. All the past transaction information (i.e., the transaction log) involving Bitcoin is available on the network. It is called a “block chain.” When someone wants to make a transaction using Bitcoin, the information on receiver and remittance amounts is constantly added, and the block chain is renewed. After being added to a block chain, the actual transaction is settled on the network.

In order to record new transaction information on a block chain, we need to solve a puzzle that requires sophisticated computer processing. Those who solve the puzzle are computers or owners called “miners” and the process is known as “mining.” The miner who solves the puzzle first adds new transaction information to the block chain and gets Bitcoins issued. A miner can own the Bitcoin issued. It’s just like mining for gold, by working hard with certain tools.

The puzzle that requires complicated computing bases the security of the Bitcoin network on anonymity. If someone wants to get Bitcoin in an inappropriate manner, he needs to process computing faster than the other miners in the world, since Bitcoin is issued only by being recorded on a block chain. But it is virtually impossible to outdo the computing of the overwhelming majority of miners. This is how dishonest acquisition of money is prevented.

It is possible to track all the transactions afterward, since they are open on the block chain. This also makes it harder for unfair transactions to happen. Furthermore, as issuance increases, the calculation volume involved in computing quickly increases. The amount of issuance is limited to under 21 million BTC. Therefore, unlike a state currency like the yen or dollar, inflation should not happen with Bitcoin, since there is no central bank arbitrarily controlling the money supply. This may be true, but might there not be other problems?

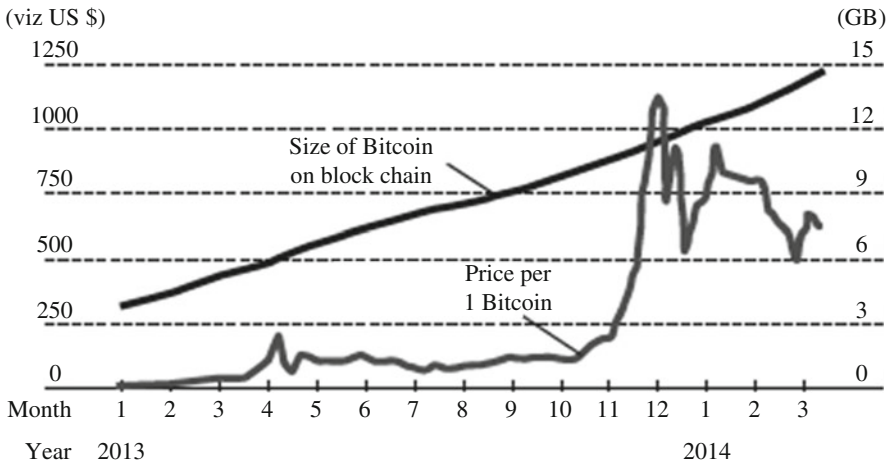

Fig. 3.1 Price and transaction volume of Bitcoin. Sources: "Hidden flipside," The Economist, Mar 15th, 2014, Bitcoincharts.com; Blockchain.info

Problems with Bitcoin

Figure 3.1 shows the price of 1 Bitcoin against the US dollar and the size of the block chain. The price of Bitcoin, after hitting a peak of over $1000 in November 2013, quickly dropped and stayed at around $500–$750. But the size of the block chain, indicating transaction size, has consistently increased.

The supply of Bitcoin has halved every 4 years. 12.5 million coins had been issued and were circulating in April 2014, 4 years from the currency's foundation. By 2017, 87.5 % of the total coins and by 2033 99 % of the total coins will have been issued. In short, issuance will radically fall from now on. Is it necessary to make money extremely scarce to keep its price stable?

As shown in Fig. 3.1, the price quickly goes up although it fluctuates. This is a deflation money whose value will increase gradually. It should be impossible to keep the value of money stable.

We could say it was designed so that its money value would keep going up. The founders and collaborators of Bitcoin who own coins issued way back can expect capital gains. A Japanese (or Japanese American) named Satoshi Nakamoto allegedly created the system of issuing and managing Bitcoin. In 2008, Nakamoto presented the protocol of Bitcoin in an article "Bitcoin: A Peer-to-Peer Electronic Cash System" and created software in 2009. While Nakamoto does not admit he is involved in operations, he is said to own about a million coins ($1.1 billion equivalent, at the rate in December 2013). If the issuance limit was designed to benefit him, he should have been aware that this would favor speculation. This is a big problem for Bitcoin.

Bitcoin Spreads Out

In 2009, when Bitcoin first appeared, only a few hackers respected the P2P design as a distributed network currency, unlike centralized currencies which state (central banks) issue and which are settled through financial institutions. Bitcoin could not buy much back then, so it was more like money used for net games. However, once someone was able to buy pizza for ten thousand Bitcoins, more goods and information became available to purchase with them. Bitcoin increased its purchasing power by increasing the number of goods it could buy.

Through "money creating markets," businesses and non-geeks also started to adopt Bitcoin for settlement or transactions because of its convenience. State currencies such as the dollar or yen came to be exchangeable with Bitcoin on Internet "exchanges." Settlement in Bitcoin does not go through financial institutions and does not cost anything. The convenience of settlement was widely appreciated and the amount in circulation exceeded $1 billion in April 2013. Bitcoin thus quickly increased its size after only 4 years in existence.

Not long after, however, Bitcoin acquired a negative reputation as an aid to money laundering or online use for gambling, drugs, or gun transactions. Since its supply has a ceiling, it has become subject to speculation and risks wild price fluctuations in foreign exchange. It has become threatening to some countries and China has banned Bitcoin transactions.

On October 2, 2013, the FBI uncovered the "Silk road," an underground site. It turned out to be a huge black market where numerous illegal commodities like drugs, computer viruses, fake driver's licenses, and murder services were traded with Bitcoin. It appears that the site was operated by a hacker and no criminal organization was involved. 9,519,664 Bitcoins were traded from January 2011 through to July 2013, and the site made profits of 614,305 Bitcoins in transaction fees. When arrests were made, the amount transacted was the equivalent of $1.2 billion, and the transaction fees were $79.8 million. This is huge.

In February 2014, the Mt. Gox exchange based in Japan was hacked and lost 750 thousand of its customers' Bitcoins as well as 100 thousand Bitcoins of its own, approximately 850 thousand Bitcoins (47 billion yen equivalent at the rate of 1 Bitcoin = 550 dollars). It also lost 2.8 billion yen of customers' cash, sending it to bankruptcy. The bankruptcy of the largest exchange quickly made people suspicious of Bitcoin. The finance minister of Japan said: "that kind of thing won't last long, I knew it would collapse sooner or later."

Bitcoins were stolen from Mt. Gox's servers; Bitcoin's system was not attacked fundamentally, however. How the hack happened and whether Mt. Gox as a company owed any responsibilities to it will be revealed later. Actually, Bitcoin continued to circulate after the collapse of Mt. Gox. The price has stayed stable too. Bitcoin, which allows people to transfer money abroad for a lower cost than a credit card without relying on financial institutions, still looks attractive to many people.

Of course, uncovering underground sites, wild fluctuations of price, and the collapse of large exchanges demonstrate that Bitcoin was a hotbed for tax avoidance and illegal operations and also created markets for highly speculative ideas.

Being anonymous and safe is, unlike state currencies, an outstanding attraction of Bitcoin. This was taken advantage to make money and many people came to use it for that purpose. A knife can be used to prepare a good meal, but it can also kill someone. Likewise, Bitcoin can be used for good as well as bad. Even if it has evil uses, however, this should not negate the positive side of the technology. The technology and system developed and modified for Bitcoin still has a future. In fact, many other networked crypto-currencies, modified versions of Bitcoin, are emerging as a group of "electric coins," e.g., Coinalpha, FastCoin, Litecoin, and Ripple. The technology might also apply to information security as well as to currency.

Bitcoin and Free Software

Bitcoin is a money totally different from the Ponzi scheme *Yenten. Yenten* was issued and managed by a company (L&G) and based on a free-standing rule that continues to issue the same amount of *Yenten* as the initial funds deposited by members. The system was doomed to collapse unless the members double each year. On the contrary, Bitcoin is issued and managed by numerous minor works, and its supply is designed by a program not to exceed a certain amount.

As you may have noticed already, the system of Bitcoin is very similar to "free software." This is a software whose source code is open to the public and provides everyone with a license to use, copy, and distribute it. Anyone can obtain and modify programs. It is said that Linux OS is superior to Windows because the open nature of its development environment greatly contributed to debugging and quality improvement. To underline the point, free software is also known as "open source software."

Since free software was created in opposition to monopolistic copyright, the idea of free software is also called "copyleft." Hackers who modify programs join the project not for the intellectual property interest but to win reputation or respect from other hackers and for their own joy of creation. The design principle of Bitcoin belongs with free software and P2P. Miners of Bitcoin also participate in it out of sympathy for the free and decentralized design principle rather than just for the reward.

Bitcoin Points to the Future: Denationalization of Money and Competing Currencies

Bitcoin's technological innovation is not all about open source or security technology supported by a P2P network. Rather, its particular "mining" process provides an incentive to users to participate in the currency's operations such as issuance,

settlement, renewal, and the maintenance of information. Miners provide a service to obtain Bitcoin. By doing this, they actually make a dual contribution. They participate in maintaining Bitcoin's currency system, and, by expanding its user base, they increase the currency's size and purchasing power. In order for a currency to be sustainable, it is necessary to manage its issuance operations continuously and to increase the number of users as well as of items the currency can buy. Bitcoin provides a method to achieve these two ends simultaneously.

One example of distributed computing is "SETI@home," an attempt to search for wireless signals from extraterrestrial intelligence in electromagnetic radiations observed by the radio telescope at the Arecibo Observatory. The project called for participation from Internet communities that are interested in contact with extraterrestrial intelligence and asked for the data analysis results to be returned from millions of personal computers, which collectively matched the performance of the latest supercomputers. Yet, it was "volunteer computing": The participants offered their personal computers' computing capacities with no benefit (except satisfaction of their curiosity). In contrast, Bitcoin realized "incentive computing" that offers compensation as Bitcoin money in return for the participants' computing capabilities. Besides that, the fact that Bitcoin provided a strong economic incentive to exchange with state currencies helped the system based on distributed computing to spread widely.

What does Bitcoin's spread mean? Private currencies based on a P2P distributed network can now compete more realistically with centrally controlled state or regional currencies.

Currencies such as the yen or dollar are backed by state power and law and are issued and controlled by a central bank at tremendous cost and effort. Naturally, they are strong currencies with strong purchasing power. If citizens, firms, and organizations can overcome the downside of Bitcoin and develop their own private currencies with a built-in mining incentive, it is not impossible for such private currencies to compete effectively with state currencies.

The Austrian economist, Friedrich Hayek, once proposed in his *The Denationalization of Money* (1976) to denationalize state money by liberalizing the issue of money and to allow currencies to compete (currency competition in terms of its quality, not quantity). Hayek thought competition between a number of state and private currencies would drive out bad money because of its decreasing value (Gresham's Law) and good money with constant value over time would thrive as a result. He thought that the direction of money's evolution could be improved beyond what it is now. For Hayek, state currencies cause inflation by expanding social welfare, and fiscal expansion in order to wipe out deficits and national debt can lead to war.

Forty years after his book, the development of information technology such as the Internet, P2P, and free software has made currency competition possible, enabling us to choose better quality currencies.

Hayek's argument seems even more relevant when we consider that Abenomics is prepared to supply money indefinitely until an inflation target is met. Bitcoin's principles are likely to spread when citizens respond to the crisis of state currencies.

The e-monies and community currencies that have been around for a while also will learn from Bitcoin's technology and will compete with each other to find a certain niche market for themselves.

3.5 What Does the Informatization of Currency Mean?

Two Currents of Money: Toward Informatization and Creditization

There have been two directions of money's development until now.

Money has changed its form from cattle to precious metals (gold and silver), to coinage, to paper, to bills, to checks, to plastic cards, and now to e-money. This lasts, based on information technology, communicates, and records value in the form of electronic signals. We cannot see the numbers that show this value without the mediation of hardware and software.

Thus, money has come close to being information, data, or the program that processes it, none of which depend on its material scarcity. It has got rid of the aspect of being a "good" and has become purely an "event." We can call this informatization.

Money exists through a self-fulfilling idea held by users or subjects. Its objective vehicle has also become information or a program. Bitcoin thus seems to be the latest form of money as information.

The other direction is "money as credit." The core of money has changed from coinage (standard money) to bills, to convertible banknotes, to deposit currency (demand bills or IOUs), and to nonconvertible banknotes (a bill/ IOU without demand). In other words, it has changed from "standard money" made of gold or metal whose material itself has value to credit money which certifies the existence of debt and promises its repayment.

Money as debt has also made a transition from being convertible to nonconvertible, and debt has become just nominal without an obligation to repay. This trend, although related to it, is separate from the informatization of money. It entails a shift in the monetary or financial system, not in the material of money.

Credit Money and Credit Creation

The current legal tender in Japan may be classified as two types. Although these share a measurement unit known as the "yen," they differ in origin and characteristics.

One of these types is "cash currency," the coins and bills we have in our wallet.

A bill is a Japanese central banknote issued by the Bank of Japan, and a coin is fractional currency issued by the government of Japan. Cash is manufactured from

such materials as paper and metal at the National Printing Bureau or the Japan Mint and then goes into public circulation when issued by the Bank of Japan. A Japanese banknote can be thought of as a type of liability certificate (IOU).

But they are nonconvertible fiat money. The Bank of Japan, even if asked for repayment in terms of the monetary standard, does not have to respond to that request.

Nevertheless, Japanese banknotes settle liabilities between private subjects and are accepted as cash for private subjects to pay taxes to the government.

The other type consists of balances in our bank account or "deposits." A deposit, unlike cash, does not take the form of paper or metal. It is only numbers printed on a bank statement or recorded on a computer. Saving and checking balances are deposits, which depositors can refund immediately upon request. Cash, if put in a bank account, will become a deposit, while the deposit becomes cash once it is refunded.

Private banks, while reserving part of their total deposits for refunds, lend to businesses and individuals and in this way create deposit currency at several times the total amount of cash on deposit. This is "credit creation."

As we have seen, credit money has been developed as a means of payment. Credit money has already been duplicated in the form of central banknotes, and deposits are acknowledged through private banks' liability certificates. The latter significantly changes in volume over time in response to economic cycles or demand, destabilizing market economy in the process. The bubble economy in the late 1980s was fueled by private banks' credit creation which generated a large amount of money for speculation in land and stocks.

The Essence of Money Is Suggested by These Two Currents

Karl Marx once said that "human anatomy contains a key to the anatomy of the ape. The intimations of higher development among the subordinate animal species, however, can be understood only after the higher development is already known" (Marx, 1857). This means that understanding humanity is a prerequisite for understanding apes, an evolutionary ancestor. If applied to money, this could be rephrased as follows: The anatomy of modern money contains a key to the anatomy of money in general. Therefore, these two currents – informatization and credit money – can show us the essence of money.

The informatization of money shows that money is not a physical "thing," but social "matter" made possible by self-fulfilling ideas. Money does not have to be a "good" with value located in its material; it can be money insofar as its matter indicates value as a "measure of value" (the second function of money).

The creditization of money, on the other hand, indicates that money tends to transform itself from a "means of exchange" between goods to a "liability certificate (IOU)" recording a transfer or liability of value. Such an IOU turns into a "means of purchase," allowing people to buy goods by itself as well as a "store" to hoard value.

Furthermore, it could function as a "means of exchange/circulation" as well if it can smoothly mediate the buying and selling of goods in succession. When a good or service moves in the opposite direction to money, buying or selling transaction can take place and a market comes into being.

Accordingly, cash and deposit money in the form of liability certificates (IOU) equipped with a standard of value embody the essence of modern money.

When Money Changes, Markets Will Change

Markets and the Internet are similar systems. On the Internet, in order to communicate massive amounts of information fast, data is divided into small units (packet) and then forwarded through various paths in a bucket brigade manner. In markets, money plays a similar role.

Generally, in a real market, concentrated exchange, where a number of participants get together at some place at some time to set commodity prices by auctioning and trade, is not common. Rather, as in a department or convenience store, sellers and buyers usually make trade bilaterally. Taken as a whole, bilateral trade conducted in different places and times looks more like a "distributed" market with no central exchange. A "distributed" market cannot exist without money, since selling and buying cannot be done separately without the decoupling function of money. Money thus works as a medium to create a "distributed" market.

Money is an information medium that turns value into a monetary unit and forwards it from buyer to seller, thereby separating buying from selling.

When money itself becomes a bearer of value, it separates buying from selling as independent processes and communicates them like a packet on the Internet. Hence a buyer with money can have the freedom to buy (or not to buy) any commodities in any place at any time. A seller can also obtain, through money, the freedom to price his commodity based on his own information and sell it.

With money, we don't have to wait for any "double coincidence of wants" to happen; money enables buyer and seller to make their own decisions. We can regard the market as a collection of independent or separate trades carried out by a number of sellers and buyers making use of the medium of money.

Looked at in this way, it is obvious that money is not a convenient means for exchange in the market. Rather, it is a medium creating a market network where numerous trades can take place.

Just as a medium such as a packet makes a free and independent distributed network possible on the Internet, in markets a free and independent distributed network is made possible through the medium of money.

If "money creates markets," we could say: "when money changes, the market will change."

Chapter 4
The Disease Haunting Money: The Relation Between Money and Bubbles

4.1 Humanity's Desire to Synchronize Creates Bubbles

We have discussed money and markets from various angles. This was only the foundation for introduction to the following applications. Now that we have money and markets, let's talk about bubbles. Once more, self-fulfilling ideas play a crucial role here.

The Word "Bubble"

When we hear the word "bubble" in Japan, we always associate it with the so-called Heisei bubble which lasted from 1985 to 1990.

The word "bubble" was extremely popular back in the 1990s. We heard several times that the "bubble has burst" or that we were entering a "recession following the collapse of the bubble economy." The word, however, was not commonly used in the middle of the 1980s, which was also a bubble era, except in some specialized journals of economic theory or history. The term "collapse" was used in relation to stock markets, but not "bubble."

Take a quick search of Japan's four economic and business newspapers – *Nihon Keizai Shimbun* (Nikkei), *Nikkei Kinyu Shimbun* (Nikkei Financial Daily), *Nikkei Sangyo Shimbun* (Nikkei Business Daily), and *Nikkei Ryutsu Shimbun* (Nikkei Distribution Daily). The number of articles that included the words "bubble economy" hit a peak in 1992 and has gradually decreased since then. In contrast, "collapse of the bubble" was frequently used through 1998 after the peak in 1997, way after 1992. It shows that the word "bubble" was constantly used throughout the 1990s, but its usage apparently shifted from the early 1990s to the late 1990s.

If the phrase "bubble economy" connotes a somewhat nostalgic sentiment of missing the old days of the then economic booming period, "collapse of the bubble" conveys blaming a bubble as the cause of the long recession period following the 1990s (often called "the lost decades").

M. Nishibe, *The Enigma of Money*, DOI 10.1007/978-981-10-1819-0_4

It seems to me that the popularity of the word "bubble" is itself an expression of the bubble system. Indeed, people's minds radically changed from the time of the boom to when the bubble collapsed.

The Heisei Bubble

It's been more than a quarter century since the "Heisei bubble" now. The younger generation may not know what it was really like.

It is said that the Heisei bubble started brewing after the Bank of Japan adopted a low interest rate policy in response to a stronger yen ($1 = 242 yen to $1 = 125 yen) following the Plaza Accord in September 1985. The Bank of Japan kept the discount rate at 2.5 % from February 1987 to May 1989. This monetary easing drew businesses and households into speculation and active money management. The price of stocks and land soared, reinforced by the commonly held belief that "land prices always climb and never drop." Ever since the war, lending based on borrowers' land had expanded, and businesses and individuals who had bought stocks or land based on their unrealized book profits from asset price increases bought even more stocks and land.

Eventually, the Nikkei Index hit a record 38,957.44 yen on December 29, 1989, while the land price of the area within the Yamanote train loop was worth the entire real estate of the United States. Super luxury cars like Rolls Royce and other luxury brands sold like crazy. Japanese people bought famous paintings by Van Gogh or Renoir in auction.

Collapse, as is always the case, occurred abruptly. The stock price started to fall in January 1990. The government, concerned about soaring land prices, issued more stringent rules for lending on land, and the Bank of Japan gradually hiked the discount rate up to 6.5 %. In the fall of 1990, the stock price index fell below 20,000 yen, half of what it was at its peak, and kept declining further.

The collapse of the bubble left appraised asset losses of 1300 trillion yen as well as a huge amount of bad debt with the banks. The banks stopped lending, forcing many businesses to go bankrupt, individuals to become unemployed, and prices to drop. Japan went into a so-called deflation spiral. Since the 1990s, the country has shown near zero or negative growth.

That was the "Heisei bubble" as now described by the textbooks.

This may begin to explain why people went crazy about stocks or land, but it does not tell us anything about the fundamental reasons for this abnormal behavior.

What Is a Bubble?

What is a bubble? We cannot assume that it is greedy people's own fault when they engage in risky trade like speculation or gambling. Rather, we should take it as a collective phenomenon, which can often happen as a result of the ideas normal people acquire in their daily life.

Bubbles should be understood as phenomena similar to the self-fulfilling ideas we discussed in relation to money. If money, which makes markets possible, is made out of self-fulfilling ideas, bubbles, which the market creates, can be explained by a similar mechanism of collective psychology.

There used to be a gift-giving feast called "potlatch" practiced by Native Americans in North America such as the Kwakiutl, Tlingit, and Haida. They generously gave away their precious valuables and sometimes even destroyed their own treasures by themselves. It is said that at that moment they became ecstatic.

A bubble only emerges in a highly developed market economy. But it resembles potlatch exchange in that both cases begin as a gift-giving exchange of valuables and wealth among participants (think about the *kula* exchange – gifts called "*vaygu'a*" consisting of necklaces and armbands in Trobriand Islands are traded from island to island and eventually returned to the initial island), and they always reach a climactic peak to collapse, with their values destroyed.

Potlatch is a kind of collective hypnotic trance. Behind it seems to be the synchronizing effect in communication among people. The similar psychological mechanism should be working with a bubble.

Humanity's Selfish Desire to Synchronize with Others Creates It

By the way, the original meaning of the English word "bubble" is bubble foam. Imagine bubbles all over you when, as a child, you tried to blow with a straw and a little bit of soap. It is an airy ball covered with an extremely thin soap skin. It won't last long. It is doomed to "pop up to the roof, collapse, and vanish" sooner or later, as a Japanese folk song goes.

A bubble refers to a situation where the price of stocks or land keeps climbing with no real economic backing. A general increase in asset prices does not necessarily constitute a bubble. The characteristic of a bubble is that asset prices increase way beyond the level of current economic substance. No one can tell how much increase is abnormal or what the level of substantive value is. This is also a feature of bubbles.

If we want to define bubbles a little more precisely, we need to calculate the theoretical value of asset prices and then identify their variance from the actual price.

For instance, stocks, real estate, and bonds follow income gains from dividends, rents, and interest, respectively. The expected income (income gain minus expenses) over the long term can be discounted by a long-term interest rate to come up with the "present value." Generally speaking, the theoretical value of the substantive asset price comes down to this present value. This is not the actual price, but a hypothetical one. No wonder then that, when prices are increasing, people cannot believe whatever is supposed to be the theoretical value.

When a bubble is brewing, as in the "Heisei bubble," market participants feel like they have become rich. Actually, the bubble is not caused by a shared idea that everyone should be rich. Rather, a mixture of selfish and synchronized desires leads

people to try to outwit others in order to make a quick profit or not to miss opportunities everyone else is taking advantage of.

The harsh reality, when the collapse comes, is that only those who sold first eventually make money. Those who missed that chance could go bankrupt. Behind the boom and bust, some make money while others lose. The total profit and loss is zero or negative. A zero-sum or negative-sum game is the inherent logic of bubbles.

Bubbles and the Theory of Evolution

Bubbles are not a recent phenomenon.

If you take a look at world history, you will quickly learn that bubbles emerge and collapse in every economy with developed markets and world commerce. Edward Chancellor's *Devil Take the Hindmost: A History of Financial Speculation* describes the details of past cases. It provides us with many fables including their lessons and ironies. Given that humanity has repeatedly made the same mistakes, we are animals that do not learn much from history.

In the early nineteenth century, Jean-Baptiste Lamarck proposed an evolutionary theory: "giraffes were only a kind of horses that used to have regular short necks." When it comes to evolutionary theory, Charles Darwin's theories of survival of the fittest and of natural selection are well known. But Lamarck was a French naturalist who lived before Darwin.

According to him, giraffes have long necks as a result of an evolution over generations: a long time ago, horses, ancestors of the giraffe, ate leaves in high trees and eventually ate out all the leaves. In order to eat leaves in higher trees, giraffes had to stretch their necks and gradually made their necks longer. Little giraffes had to stretch even more to eat leaves and their necks ended up being that long after stretching their necks over generations. What each generation acquires by learning is called "acquired characteristics." Lamarck claimed that evolution is made possible through acquired characteristics being inherited from parents to children. In this case, the acquired characteristic is that giraffes' necks get a little longer.

Let's return to bubbles. If we look at their history, human beings do not seem to inherit an acquired characteristic from their ancestors that inhibits the desire to make money just for itself even if they have gone through speculative bad times often. We keep repeating the same old bubble stories over and over from generation to generation.

It is often said that a generation with no miserable experience or memories from war causes wars. This should apply to bubbles. If human beings have an inborn selfish desire as default and if it never changes, there are only two ways left: one is to restrict it by way of social measures such as rules and laws and the other is to continue to make an attempt to learn from history in order to stretch our necks a little longer.

I don't think, in any pure sense, that there are selfish persons or altruists per se. A human being has a complex existence with various conflicting factors within

himself. We are created by the environment and institutions we were born in, by the people surrounding us and the knowledge and experience we acquire. People can learn many things from others as well as from their own experience. Knowledge and wisdom are handed down over generations. It may of course be very difficult to learn something from there.

Aesop's Fables are a collection credited to Aesop in Greece and others inherited from prior times. They have been told over generations and contain wit and humor. Real fables are always critical and good for adults. In order to avoid being oblivious in a time of fast-paced trends coming and going, we may need to review the *Aesop's Fables* about bubbles and taste the poison in them.

4.2 A History of Bubbles

The Tulip Bubble

The human race has gone through bubbles a number of times. We have experienced the Heisei bubble in Japan, the dotcom bubble in the United States, and the housing bubble more recently. Examples of a boom and collapse of commodities prices caused by mass speculation seem as old as history.

In France, nine churches tried to pay a massive amount of money to compete to buy some unknown object called the "Foreskin of Christ." Horns of narwhals also called unicorn, a legendary sacred animal, were believed to be make a cup to counteract poison, leading many countries' royal families, who were afraid to be poisoned, to pay tons of money for them.

Let's look at the oldest case recorded. It was a true story that happened in the Netherlands nearly 400 years ago. It was not about shining gold, real estate, or stocks; it was about plant bulbs that may be found anywhere. These were tulip bulbs. We human beings can be frantic about bulbs when money is involved.

The tulip is a lily plant that grows east of the Mediterranean with almost 160 different varieties. The word comes from the Turkish *tulipan* meaning turban. It was first imported to the West in the sixteenth century. A traveler who visited Turkey in the sixteenth century was fascinated by the beauty of tulips and brought some back to Vienna. It won an instant reputation and spread out to Germany, Belgium, and the Netherlands within a few years. Tulips were first imported to the Netherlands from Turkey in 1554.

Since Carolus Clusius succeeded in raising beautiful tulips at Leiden University in 1593, the exotic flower attracted highly claimed attention, and growing tulips became an act of honor among royal and noble families.

When growing tulips, there is a small chance of creating a new kind by mutation. Tulip raisers wandered through their gardens, expecting a rare tulip to come by. Rare flowers of new beauty could be sold at a high price by multiplying their bulbs. Tulips were among the most sought after flowers, and their rare bulbs came to be an object of speculation.

Why Tulips?

Tulips became wildly popular first in France in the early seventeenth century and then in the Netherlands. In Amsterdam, there was a stock market already back then. Tulip bulbs went public on the stock market. Other cities like Rotterdam and Leiden followed and created a permanent market for tulip bulbs.

Trade in tulips was conducted primarily in winter in the form of bulbs. Usually, those who wished to trade brought in bulbs along with their flower samples to the inns or pubs where traders gathered or hung out. They exchanged, for example, a kind of bulb called "Admiral Tromp" they had bought for 500 guilders with another kind of bulb named "General Boll" with an additional 200 guilders of cash.

In small towns with no exchanges, hundreds of people got together in a large bar to trade. Colorful full-blown tulips put on the dining tables or sideboards showed up the site which looked like a feast.

Future contracts were introduced in order to deliver tulips in the spring several months later. Most did not receive the delivery of their tulips; they traded to resell at higher prices before the expiration of their contracts, which naturally strengthened the speculative nature of the trade.

In the Netherlands at that time, these trades were called "windhandel." They were "paper transactions."

The tulip trade had problems from the beginning. There were no membership systems to guarantee the execution of contracts. There was no knowing if the bulbs to be delivered on futures contracts would be what the contracts designated until the bulbs flowered. To deal with these problems, new laws were written, a notary public system specifically for tulips was introduced, and specific regions were designated for tulip trades. As the bubble boomed, systems followed more or less.

This is how tulip mania took hold.

Tulip Mania Accelerates

In Germany, in the mid-1630s, while the Thirty Years' War continued, not only noble families but citizens, farmers, craftsmen, sailormen, servants, chimney sweepers, used-clothes shop clerks, and the general public came to participate in the market. Speculation mania reached its peak. One of the conditions for bubbles is that ordinary people participate in the trade. That is a law since old times until today. Either in the Heisei bubble in Japan or the housing bubble in the United States, not only investors and corporations but also ordinary people put significant amounts of money into investments they make when bubbles are about to burst.

In today's world, foreign investors sniffing bubbles go for quick money. Many foreigners joined the tulip bubble then. Consequently, money flowed into the Netherlands, pushing up the prices of ordinary goods, land, buildings, horses and carriages, and all other luxurious items. The prices increased rapidly.

Bulb prices continued to climb, inducing people to buy bulbs by borrowing money with their house as collateral in order to catch up with the market. That, in turn, pushed the market up even further. By 1636, a single bulb was exchanged for a brand new set of carriage and two horses with all the equipment. Although it is not clear how much value a carriage was worth then, it must have been more than a luxurious car today. This is nothing more than a bubble expansion.

In order to obtain a bulb named "Viceroy," they needed four cows, eight pigs, 12 sheep, four carriages of rye, two carriages of wheat, two barrels of wine, four barrels of beer, two barrels of butter, 500 kg of cheese, and a whole set of family equipment. I have no clue how much that would be worth in today's money.

The price of a bulb named "Sember Augustus," which a sailor found in the cargo, mistook for onion, and ate, is even more surprising: it was worth cash twice a Viceroy and a carriage with horse.

This is how crazy people were about tulips. A man running a shoe shop in the Hague succeeded in creating a black tulip flower in his garden by crossbreeding. A professional tulip grower in Harlem City who somehow heard about the black tulip visited the shoe shop and told him he would like to buy the bulb. The shoe shop man was able to sell it for 150 guilders, but the professional grower threw the bulb he just bought to the ground and stepped on it in front of the shoe shop man.

The shoe shop man was stunned to see his bulb deliberately destroyed. The professional grower explained that he too had another black tulip bulb. In order to maintain its scarcity, he had to destroy the other one. The shoe shop man, on learning that his bulb could have been sold for scores more, died of the shock. This story makes me miserable.

The Peak of a Feast Is the Beginning of Its End

When the speculation reaches at its peak, its end is near.

In 1636, when a small number of people started selling, this invited more selling, leading to a panic. Prices continued to collapse as if they were falling to hell. Those who borrowed money with their houses and land as collateral went bankrupt. The Dutch economy, then the center of world commerce, was severely hit.

Interestingly, the tulip mania occurred a prosperous period for the Netherlands economy. After that, the Netherlands fought against England in the Anglo-Dutch Wars over command of the seas and colonies, beginning in 1652 and ending with a peace treaty favorable to England. The decline of Dutch military power and economic prosperity started from there.

The crash of the New York stock market in 1929 also occurred at a peak of American economic prosperity having become the largest creditor country during World War I. The collapse of the Tokyo stock market in 1990, the beginning of the collapse of the "Heisei bubble," came at the peak of Japanese economy's long-term prosperity lasting some 35 years from 1955. Many countries all over the world appreciated Japanese companies' collective and decentralized management practices

such as *kanban* or QC (quality control); some even said that "Japan is Number One." Japan was the largest creditor in the world. "Pride goes before a fall" – this seems like another universal rule.

Hundred years after the tulip mania, another bubble occurred in the Netherlands, this time with hyacinths. It is not clear why hyacinth bulbs were chosen as the subject of speculation as a rehash of the tulips. The Netherlands was declining already at that time and this bubble was not so large as before.

During the hyacinth mania, various warnings were given since memories of the previous tulip bubble were still fresh. Nevertheless, the same speculation craziness returned.

For those of us who know that bubbles are repeated events in history, the truth is that "people repeat the same mistakes generation after generation."

We still experience bubbles here and there 400 years after the tulip bubble. Probably we have not changed much since then. The lessons are obviously difficult to learn from the history.

A Man Named John Law

Following the Netherlands, bubbles occurred in France and England at the beginning of eighteenth century. The leading character in the French bubble was John Law from Scotland. Law's bubble was created when his inventive financial system worked well, but only up to a certain point.

Law was born the son of a goldsmith in 1671. Goldsmiths then worked like banks in our time, managing currencies and lending money. When he was young, Law stayed in London and studied banking and finance. He was also a playboy, drinker, and gambler, known as "Dude Law."

His stay in London had to be suspended. Law had numerous lovers. The sister of another dandy Edmund Wilson made fun of one of Law's lovers. Law fought a sword duel with Wilson and killed him.

Law was arrested, found guilty, and sent to a prison. However, he managed to escape from the prison and headed to the continent. Interested in national fiscal policy, Law visited the financial district of Amsterdam, studied the financial system there, and even published a small brochure in 1705 entitled *Money and Trade considered, with a Proposal for Supplying the Nation with Money*.

Here he outlined his view that Scotland should increase its money supply using land as collateral since shortage of money was the cause of the prevailing recession. An increase in the money supply would stimulate employment and lead to growth of national wealth. This is similar to Keynes' view in later years. But Law's opinion seems to have been way ahead of his time. No one listened to him in Scotland. He also proposed something similar to the Savoia family on the continent, but in vain. In the meantime, he built substantial personal wealth through gambling and speculation while traveling to Brussels, Vienna, and Rome. The economist Friedrich

Hayek makes an ironic link between Law and Keynes which has echoes of the quantitative easing currently employed:

> *Lord Keynes has always appeared to me a kind of new John Law. Law, like Keynes, had been a financial genius who made some real contributions to the theory of money. And, like Law, Keynes could never free himself from the false popular belief that, as Law expressed it, as this addition to the money will employ the people that are now idle, and those now employed to more advantage, so the product will be increased, and manufacture advanced.* (Hayek, *Good Money, Part II*)

Law's Alchemy

In France, Louis XV succeeded to the throne following the death of Louis XIV. As he was only 5 years old, Philippe d'Orléans became regent. France at that time was going through a long recession, manifested as a shortage of money and low prices. Louis XIV's aggressive wars dissipated life at the Palace of Versailles, and the prevalence of bribes all undermined the national treasury. The fiscal deficit was over three billion livres. Facing this predicament, Philippe, who wanted to fix the national finances, had good reason to listen to Law's ideas.

Law brought up several papers and memoranda and tried to convince financial officials of the effectiveness of issuing banknotes. In May 1716, he was granted a license to establish a Banque Générale. Law was the head of the bank and its front office was on the first floor of his house. An initial capital of six million livres was paid in cash (25 %) and the remainder by government bonds whose value was currently just 22 % of their face value.

Banque Générale's banknotes could be exchanged with silver coins, with the exchange rate determined by the market as of the date that the bills were issued. The banknotes were also used for the government's ordinary expenditures and for underwriting government bonds, improving their credibility, which helped them to circulate widely.

As the banknotes spread, Law pushed down the lending rate from 30 to 6 % and then further down to 4 %, succeeding in shutting out private usurers. Based on its capital of six million livres, 60 million livres of bills, ten times its capital, were issued. The banknotes not only bore interest but also had extremely high credibility and no one declined to accept them. A premium of 15 % more than the exchange rate with silver was also part of the banknotes. Although short-lived, the French economy was stimulated.

This was Law's success story. But it is only the beginning of the story about him.

Law's Magical System

What Law needed was cash revenue backing the banknotes issued. But this cash revenue did not have to really earn income; *as long as people believed it did, it worked*. It should therefore not be a dream to fix the national finances that were

about to collapse. And the deliberate method he figured out to make it happen later came to be called the "Law's System." It was a fraudulent act attempt to deceive the nation, taking their cash to dissolve the national debt.

It went like this: establish a chartered company that (is believed to) creates enormous profits. The company underwrites the banknotes issued by a royal bank and lends them to the state. The government uses them for its fiscal expenditures and the redemption of debts, so that the banknotes circulate in the market. They then attempted to absorb the banknotes by making the company go public. Only if people believe in the forecasted company's profits would they be willing to accept the company's share certificates in exchange for the banknotes – as long as the share price keeps increasing.

France then owned a colony in the New World called "Louisiana" with vast territories stretching from the Gulf of Mexico to the Rocky Mountains in the west and the Great Lakes in the north. The colony was in a miserable condition: many colonists are reported to have died within a year of their arrival, due to the harsh climate, yellow fever, and malaria.

The general public always paints a rosy picture of the unknown world. Many people at that time believed Louisiana had massive reserves of gold, silver, emeralds, other precious metals, and jewels. "Profit could be huge where risk lies" – this credible sounding image succeeded in capturing the hearts of the greedy.

Stock Mania in "La Compagnie de la Louisiane ou d'Occident"

Law's idea was to establish a "Compagnie de la Louisiane ou d'Occident" with the objective of exploring and mining gold and then going public. It didn't matter whether gold could be really discovered; what mattered was whether investors would believe and buy the shares to be issued. The government agreed to the establishment of a joint-stock company, providing it with the exclusive right to rent the territories of Louisiana for 25 years and build its own army. The joint-stock company immediately decided to bring in 6000 French people along with 1000 slaves.

The joint-stock company acquired the monopoly to grow and market cigarettes which were then popular, followed by acquiring a series of companies associated with East India and China. Then they renamed it "La Compagnie des Indes," monopolizing the French foreign trade. The joint-stock company also acquired the right to mint coins, which quickly made it one of the largest companies in the world.

The 200 thousand shares of La Compagnie des Indes were issued at a price of 500 livres each, but the price fell to half of that by the end of 1718 because people were suspicious. The royal bank issued 30 % more banknotes the following year. Simultaneously, they continued to release favorable news for investors such as new acquisitions and bright business prospects. In August, the joint-stock company acquired the right to collect national taxes for 9 years.

Immediately, the market sent the joint-stock company's stock shooting up. The share price hit 5000 livres, ten times its initial August selling price, and reached

8000 livres in October. If someone had bought at the bottom, the gain would already have been 32 times. The market soared even further. While various charters were authorized for La Compagnie des Indes, the stock price panicked. Investors who had lost the chance to get into the game early tried to jump on the roller-coaster market. Over 300 thousand people rushed to Paris. On Quincampoix street, cafes, restaurants, and side streets turned into trading pits for stocks of the Compagnie des Indes, where anyone could and did trade.

It seems that Law thought about sending French people to Mississippi to actually operate the Compagnie des Indes. It is no exaggeration to compare moving from France to Mississippi back then moving to Mars now – it involved tremendous difficulties and dangers. Most applicants were criminals and prostitutes. There is no way that the colony plan could be successful.

The stock price of the Compagnie des Indes hit a ceiling close to the end of 1719. The price at that time was 20,000 livres. Shares issued at 500 livres had mushroomed to 40 times more after only 3 years. Law's national debt refinancing plan worked. The government issued bonds with yearly 3 % interest and declared that the bonds could be used to pay for newly issued shares of the Compagnie des Indes. If the share price increased, the bond holders had to exchange it with shares. Thus, the national debt was now transformed into share certificates that were doomed to turn into pieces of paper with no value.

The money received from selling shares in the Louisiana Company was used not for the development of Louisiana but for refinancing government debt. The royal bank's banknotes were lent to the government, and the government used them for ordinary expenditures and repayment of government bonds. The banknotes in people's hands went to further purchases of the Louisiana Company's shares. Money from the sale of the shares was lent to the government.

This "credit expansion" created through the issue and reverse circulation of banknotes grew like a balloon, replacing cash in people's hands with bubbly stock certificates.

The End of Law's System

Any bubble bursts in time. How did the Law's System bubble collapse? The booming in stocks of the Compagnie des Indes could not last forever. Whenever people stopped believing in the Compagnie des Indes, Law's System must cease.

And that time came in 1720. A collapse will kick in with the slightest of triggers. In January, Prince Conde and Prince Conti sold their shares in the Compagnie des Indes. It must have been a substantial amount, as they needed three carriages to carry the gold coins they received from selling the shares. Other investors hurried to sell their shares when they heard the news.

More livres were printed in response. As more and more people asked to exchange shares for gold, however, their value continued to fall. An order was given to prohibit owning more than 500 livres in gold and/or silver and to demand that all

payments of over 100 livres must be made in bills, which only had the opposite effect and spread the credit crisis even further. It was as if the government now declared that the stocks and bills had no value at all. Underground markets trading gold and silver emerged everywhere and the lines of people waiting to exchange became longer.

Even today, there are wealthy people who would rush to exchange cash for gold in search of safer assets, when worldwide financial crises take place like the crash of 2008 or if the world economy becomes unstable. Money is issued by states. But once an avalanche like a "credit crisis" happens, people seek legal tender that has value in itself or substantive things like land. This hasn't changed.

They tried to stage a play to recover the collapsed credibility of the Compagnie des Indes. One day, they hired a number of Paris vagrants and made them march through the city streets with shovels so they look like they were going to Louisiana to mine gold. This only worked temporarily. Weeks later, however, those people were found to be vagrants once more. In addition, gold was not delivered at all. People became more concerned. Many ran to the royal bank, asking to exchange banknotes for gold coins: a bank run in effect. In July of that year, a crowd of over 15,000 people rushed to the royal bank, causing 16 to die.

On June 17, 1720, exchange of royal banknotes was halted. The shares went into a free fall, and the prices of many other commodities also collapsed. Consequently, economic activity became stagnant and paved the way for another crisis.

Law, who had become the Controller General of France, was now cursed by all and attracted the anger of all. Law felt he was in danger and had no recourse but to flee to the Netherlands. After that, he lived in England for 4 years, and then he moved to Venice, where he lived the rest of his life alone with no one to care for him.

It is said that French people did not believe in banks again for a long time after the collapse of Law's System.

The South Sea Bubble Company: Originator of a Bubble

It was England's turn after the Netherlands tulip bubble and Law's System in France.

When Law's System was apparently going well, a plan was being elaborated in England to miraculously refinance the national debt, in imitation of France. England had become deeply indebted to wage war against France over a long period. England was like France in that both states suffered from debt repayment, but unlike France in that such the landed classes – the gentry and noble families – loathed the national debt there. They thought that the government borrowed money with their own lands as collateral. Super long-term pension bonds lasting 99 years could not be repaid without the owners' agreement. This gave the government a headache. They then came up with a plan.

Officials surrounding the Ministry of Finance had the idea of establishing a joint-stock company with a monopoly granted to trade with the "South Seas" covering the

Caribbean islands, the Spanish Central and South America, and the Pacific islands. The "South Sea Company" went through a tragic path, later to be called the "South Sea Bubble Company." That is how the term "bubble" was born.

What was the original bubble like then?

In 1711, legislation was arranged and the South Sea Company was established. In return for taking over the government debt of £10 million, the company was granted a monopoly to trade with the South Sea and received yearly subsidies from the government.

In 1719, the joint-stock company was granted additional subsidies and rights and also requested approval to issue new stock on condition of taking on the government's remaining debt. On February 2, 1720, as the proposal to issue new stocks passed the House of Commons, the stock price surged from £129 to £160. When it passed the House of Lords, it jumped to £390. In April, when it was resolved to pay dividends of 10 % across the board, it topped £400. The stock price gained more than three times over a very short period of time.

Furthermore, in May, an initial offer for public subscription was announced. Here was a trap to attract the pension bonds: anyone who brought in the pension bonds within the first week of the offer period could subscribe at £375 per share. The market price was artificially raised to £495 within the first 5 days to make the public offer look attractive. More than half of the remaining pension bonds agreed to be exchanged with shares.

Speculative price increases continued further, reaching £550 in May, £890 in June, and close to £1000 soon afterwards. People jumped into the game and not a small number of them made significant wealth in a short period of time.

A Shady Company = A Bubble Company

The term "bubble" did not then refer to market conditions, with stock prices extraordinarily higher than their substantial asset values. Spain insisted on its monopoly of the territories and trade in large parts of the west coast of the American continent and South America. Therefore, even if the British government granted a monopoly to the joint-stock company, the prospect of it being effective was extremely dubious. Trade ships with the British flag could have been attacked by the Invincible Armada and sunk.

The South Sea Company was not the only one with suspicious business plans; many copycat companies with no backing substance popped up one after another, imitating and taking advantage of the South Sea Company. These shady companies with unidentifiable businesses were actually called "bubble companies."

These businesses were mostly a bad joke. There were such laughable businesses as "manufacturing wheels with perpetual motion," "a business to transform mercury into pure silver," "funeral services that cater anywhere in England," and so on. Probably the most absurd was one that was "expected to yield the best profits, but whose specific business would be announced only later." Subscriptions of 1000

shares a day were received for the stocks of a company claiming conditions of "£100 per share, 2 % up-front payment with guaranteed 100 % dividend per year." As people also put a lot of money into these fraudulent paper companies, their share prices did sometimes increase to a certain level.

In June 1720, the first Bubble Act was finally enacted to prohibit the creation of these bubble companies. However, the law that passed the Houses was not necessarily to protect ignorant and innocent people from crooked business practices. The law was proposed and enacted by members of the Houses who had invested enormous amount of money in the South Sea Company and wished to protect their own interests. They were afraid few people would invest in the joint-stock company and its stock price would be undermined by the creation of many more bubble companies.

As is always the case, the bubble burst here as well. It is not quite clear if it began with selling by investors who had insider information and by people with foresight or following the negative impact of the Bubble Act on the market. There is no telling exactly why, because bubbles will collapse with the tiniest of triggers.

The market, after hitting a ceiling, went straight down: £175 in September, £135 in November, £124 in December, etc. The board of the joint-stock company made an announcement in August of an extra 50 % dividend beginning the following year, but it had no effect on the market. The stock price kept sliding with fluctuations and stopped at £140 eventually – at one seventh of the high.

Geniuses Fooled by Bubbles

One player in the market was the physicist Isaac Newton who discovered the law of universal gravitation. Newton, who served the Master of the Royal Mint and was President of the Royal Society in later years, was in the South Sea Bubble.

After investing £7,000, Newton took his profits by selling when the price doubled. Nevertheless, he bought high next time, having lost £20,000. Since this amount is currently equivalent to 100 million yen, he must have been badly hurt. He is said to have observed: "I can calculate the motion of heavenly bodies, but not the madness of people." When swallowed by bubble markets, even geniuses like Newton can be fooled.

By the way, there are a few economists who made fortunes in the markets. David Ricardo, a nineteenth-century economist, made his name as a stockbroker or dealer vying with the Rothschild family before he became an economist. If he had not quit his business to become an economist, he could have been one of the big players in modern international finance.

Keynes, a century later, although flirted with bankruptcy after betting against the German mark after World War I, managed to make a fortune through speculation for his college by the time he died. These are exceptional cases, though. There must be many more economists who were hit hard by playing the markets. Losers would not speak in public about it. Naturally, not many stories of failure are disclosed [Deirdre McCloskey's *If you're so smart (why ain't you rich)*].

It is well known that Irving Fischer, a twentieth-century American economist famous for his work on prices, almost went broke as a result of the Wall Street Crash in 1929, forcing him to borrow money from his university.

Whether a genius or not, it is not easy for human beings to free themselves from bubbles.

4.3 Bubbles as a Self-Fulfilling Idea

Money and Bubbles Have Something in Common

What does the history of bubbles teach us? It is clear that large collective phenomena of the national scale as in many historical bubbles cannot occur without money. Money, like language, is a medium essential to economic communication between human beings. No money, no market. Therefore, it is impossible to expel money from a market society. As long as money buys and sells all goods and services in the market and human psychology and desires stay the same, the problem of bubbles won't go away. What then is a bubble?

Now we can go back to the self-fulfilling idea of *The Emperor's New Clothes*. Although the emperor was wearing nothing, the crowd and the emperor himself (pretend to) believe he is wearing clothes – whether they blindly and synchronically believe because everyone else believes (custom) or they hope to benefit by pretending to believe (expectations) – and in reality the clothes were there. The reality maintains and reinforces people's beliefs.

Similarly, because people follow the custom that they have used money until now and expect it to be accepted from now on – by trusting money – it will continue to be accepted. The fact that money is actually circulating reinforces people's belief in it.

Belief and money, by being mutually sustaining, fulfill themselves and comprise the "virtual reality" of economy. To put it differently, once either belief or money fails, the other will also collapse.

The Sunspots Theory

Let's discuss here another example of such a "self-fulfilling idea."

The English economist William Stanley Jevons, known as one of the pioneers of marginal utility theory, contributed in his later years to the science journal *Nature* several times from 1875 to 1882. In these articles, he demonstrated the correlation between sunspot counts and agricultural production price statistics and suggested that variations in sunspot counts over 10 to 11 year cycle impact on the business cycle.

The sunspot counts indicate the magnitude of the sun's radiation activity. When there are many sunspot counts, Jevons insisted that the radiation energy to the earth

increases, thereby causing climate change through an increase in temperature, eventually improving agricultural productivity. The suggestion was ridiculed as an absurdity by the academic world. But even this occult-like theory, if reinterpreted with as a "self-fulfilling idea," could sound sober and reasonable. Actually, scholars researching this sunspot theory today are still active nearly 150 years after Jevons' intervention.

With the causality linking sunspot counts to grain prices aside, what would happen if a majority of people believed in a law claiming that "the more sunspot counts, the higher agricultural productivity and the higher grain prices?" (The recent researches, referring to the correlation between the magnitude of the sun radiation and that of cosmic radiation, have clarified the actual causality of the magnitude of cosmic radiation to the density of clouds on the earth's surface. They suggest that cosmic rays synchronized with sunspot counts change the earth's cloudiness and climate and then corn grain production.)

If sunspot counts increased, producers would rush to sell and consumers would buy less (wholesalers would buy less) based on the prediction of lower grain prices. Consequently, grain prices should actually decrease. Regardless of how genuine the sunspot theory is, therefore, the law could fulfill people's belief, and the business cycle could actually follow the sunspot pattern. Sunspot theory may be an extreme example demonstrating the principle of "self-fulfilling ideas." Something similar is happening with money and bubbles in their various forms.

Illusion and Reality

It turns out that even in economy, which is supposed to be much more real than culture or politics, it is not easy to draw a clear line between illusion/ideas and reality/existence. Probably it is never possible to separate them out.

The theoretical price of stocks or foreign exchange rates calculated on the basis of productivity, profitability, or the interest rate is called a "fundamental price."

A bubble is defined as the portion of the variance between the fundamental price and a market price determined by the conditions of demand and supply or speculation. According to this view, the fundamental price is "real," while the bubble is an "illusion." After the bubble bursts, it looks like an illusion indeed. But we cannot say that the fundamental price is definitely real. Not only is the fundamental price rarely realized in actual markets but money, which allows the calculation of what are called fundamentals, is itself a virtual reality.

Current stock prices (April, 2014) in Japan are now at about the same level as in 1985–1986. At the macro level, the amount added by the "Heisei bubble" looks like an illusion.

At the micro level, on the other hand, some people have lost their assets through investments in stocks, some have gone bankrupt, and others live luxurious lives having made lot of money. At this level, therefore, the bust did not destroy everyone's assets equally; it brought about the unequal redistribution of income and people.

If money, which is the foundation of all economic phenomena, is itself both illusion and reality at the same time, it is no wonder that bubbles too contain both aspects of illusion and reality.

4.4 Soros' Bubble Theory

Soros' "Reflexivity"

How do bubbles grow and burst more specifically? George Soros, a famous speculator and philanthropist, suggests a very interesting theory regarding the bubble cycle. We'll discuss it to round off this chapter.

Soros has long criticized the rational expectation hypothesis, the efficient market hypothesis, and the market equilibrium theory that believers in free market economy like Milton Friedman proposed for financial markets. It is a powerfully influential idea that small government along with the liberalization and deregulation of markets will make the market efficient and reach equilibrium. Soros claims it is harmful because it is based on a wrong theory.

As a result of policy being based on this wrong theory, Soros thinks that bubbles have occurred repeatedly since the 1980s.

Soros believes the term "reflexivity" is a key concept for understanding financial markets. Human beings, while trying to understand the world they live in, seek to influence the world and change it in their own favor. Let's call the former a "cognitive function" and the latter a "manipulative function." Social milieus where people's cognitive and manipulative functions negotiate and interact are influenced by the participants' expectations and intentions about the future. Accordingly, bidirectional links are created between participants' thinking and their social conditions. This interactivity creates uncertainties and randomness in social phenomena, making the participants' observed facts incomplete as knowledge. Soros named this interactivity "reflexivity."

It should be noted that "social phenomena" in reality refer not only to the "facts" that take place in a society but also the participants' opinions, interpretations, and even misunderstandings about those facts.

It is for this reason that participants' understandings and the reality of the society do not coincide, leaving a divergence between them.

Let's apply this to stock markets. Market participants buy and sell based on their expectations of stock prices in future. Given that these expectations are incomplete, they need to base their trade decisions on their own subjective judgments including biases and hopes. These trades, which are substantially influenced by biased expectations, shape the actual stock prices. Consequently, the ex-ante expectations of stock prices and the ex-post-facto reality do not match. Also, positive feedback is at work, where price increases attract buyers who then ditch them if prices decline. As a result, the gap between them could be large over a long period of time.

The complete competition model presupposed by market fundamentalists not only assumes complete information and expectations but also considers demand and supply to be mutually independent, leaving out the possibility of reflexive interactions between them. In the so-called rational expectation hypothesis, which assumes that all the market participants, having comprehended the (objective) eco-

nomic model, make consistent future expectations with them, human expectations and reality will have to agree (except during times of turbulence). That assumes that financial markets are equipped with self-adjusting functions and converge on the equilibrium value.

Eight Stages of Bubbles

Soros mentions the conglomerate boom and REIT (real estate investment trust) in the 1960s as an example of real bubbles that he himself experienced. As corporate earnings grew through acquisitions and real estate investment performance based on premium equity leverages, it was misunderstood as growth in business incomes, pushing up stock prices only for them to collapse.

Soros attempted to develop a typical model of boom and bust through these cases. It is a model in which a positive feedback loop of "prevailing trend" and "prevailing bias" kicks in an accelerating manner to form a bubble shooting up a price, while the bubble price will collapse when the loop reverses at a certain turning point.

What Soros calls the "prevailing trend" is working to the widely accepted world at some times, i.e., the "manipulative function." The "prevailing bias" refers to the widely accepted cognitive method that often includes misunderstandings and mistakes, namely, the cognitive function. The dynamic process of forming bubbles with those two principles follows these eight stages:

1. *The initial stage, when the boom trend is not yet recognized.*
2. *The period of acceleration, when the trend is recognized and reinforced by the prevailing bias. This is when the process approaches the far-from equilibrium territory.*
3. *A period of testing may intervene when prices suffer a setback.*
4. *Far-from-equilibrium conditions become firmly established if the bias and trend survive the testing. In this period, the normal rules do not apply.*
5. *The moment of truth, when reality can no longer sustain exaggerated expectations.*
6. *The twilight period, when people continue to play the game though they no longer believe in it.*
7. *A crossover point is reached, when the trend turns down and the bias is reversed.*
8. *A catastrophic downward acceleration, which is commonly known as the crash.*

Prices fall faster than when they rise, leaving the movement asymmetrical. Bubbles slowly shape themselves, gradually accelerate in expanding and bust at some point.

In the case of the conglomerate boom which Soros mentioned as an example, the prevailing bias was "a preference for rapid earnings growth per share without much attention to how it was brought about," while the prevailing trend was "the ability of

companies to generate high earnings growth per share by using their stock to acquire other companies selling at a lower multiple of earnings." When those two shape a loop, a virtuous circle is created: the shares of companies acquiring companies at a lower multiple of earnings are bought by investors. But when investors, after a while, recognize the risk of the bias and start selling those shares, the trend will collapse and the loop will reverse its direction.

In the case of the housing bubble, the "prevailing bias" was "the value of the collateral that was not affected by the willingness to lend," while the "prevailing trend" was "ever more aggressive relaxation and of lending standards and expansion of loan-to-value rations," i.e., "credit expansion." This is a factor commonly observed in bubbles, especially real estate bubbles.

From a broader point of view, the "prevailing bias" in bubbles after the 1980s has been "laissez-faire, namely, market fundamentalism," and the "prevailing trend" has been "overall credit expansion."

Financial crises have happened many times for the past 25 years. But since they have managed to overcome these difficulties, the "prevailing bias" and "prevailing trend" have been rather reinforced in a way. The subprime crisis of 2008 could be a large historical turning point in the sense that both of these two collapsed altogether.

The Contagiousness of Bubbles

Let's generalize Soros' theory a little.

First, the prevailing bias may be considered to be the "cognitive framework for human beings with no complete rational ability to recognize the reality of the world." It may include skewed knowledge of, misunderstandings of, and hopes for the reality. On the other hand, the prevailing trend may be the "codes and procedures of socially acceptable conduct."

When these two form a mutually interacting relationship at the micro level, a bubble emerges in a self-organizing manner at the macro level. A bubble here refers to the order or phenomenon at a macro level, like high economic growth in Japan.

In other words, the mutually reinforcing relationship at a micro level – like an engine – kicks in at an accelerating rate. It creates the macro order of a bubble. The growth of the macro order fuels the micro level further, so that the loop keeps operating between the macro and micro levels. But by chance, the prevailing trend and prevailing bias deny and weaken each other, and the bubble at the macro level breaks down of its own accord.

The prevailing bias in the case of the conglomerate boom mentioned above was the inner institution by investors that "prefer rapid earnings growth per share anyway" while the prevailing trend was the outer institution by companies using their stock that "the ability of companies to generate high earnings growth per share by using their stock to acquire other companies selling at a lower multiple of earnings."

In the case of the housing bubble, the prevailing bias was the inner institution of investors and home owners, while the prevailing trend was the outer institution of such financial institutions as banks and entities lending mortgages.

In the case of a super-bubble like the "Heisei bubble," the prevailing bias was the inner institution of not only economists, politicians, and bureaucrats but also the entire nation; the prevailing trend was the outer institution of groups of financial institutions in the rest of the world.

Furthermore, like real estate bubbles or the dotcom bubble, if a bubble takes shape in a country (the Unites States), the same kind of bubble follows to other countries (Japan). The timing of their collapse is often synchronized.

A bubble is contagious like the flu or fashion. Once a loop accompanying a positive feedback takes place in one country, it is transferred to other countries with similar socioeconomic circumstances, and the same loop is generated.

The logic of Soros' reflexivity is actually similar to my notion of the "self-fulfillment of an idea" already mentioned many times. By the "prevailing bias" and "prevailing trend" many people share, a certain idea "self-fulfills" in a society, and it evolves and expands – this is the phenomenon commonly observed with bubbles and money.

Chapter 5
Why Is Capitalist Economy Unstable? On Hyperinflation and Speculation

5.1 The Disease Haunting Capitalism Is Hyperinflation

When Money Breaks Down

Now let's discuss why modern capitalism is so unstable.

Money is formed by self-fulfilling ideas. Put differently, money is a virtual reality. If the virtual reality breaks down for some reason, people suspect and stop accepting money. What happens then?

As much as 10 % per month (or even more) of extreme inflation – hyperinflation – will occur, and monetary value will decrease cumulatively. A bill will be a piece of paper, literally. Hyperinflation is the disease haunting modern bills, and this is one of the major factors that make the capitalist system unstable.

As we discussed in the bubble stories, the royal banknotes issued by John Law were the first in history to be hit by hyperinflation. In 1720 when the share price of the Compagnie des Indes fell and Law's System collapsed, prices more than doubled.

Hyperinflation can occur when society and politics become unstable due to war or revolution. Examples are the Continental currency during the Civil War, the Assignat during the French Revolution, the German Rentenmark after World War I, the Russian Rouble after the collapse of the Soviet Union, and price increases of more than 1000 % per month during Yugoslavia's civil war.

Even If Money Vanishes, Another Money Will Emerge

So if hyperinflation happens, would money and markets vanish and would a world of barter emerge? It does not seem so. Even if state money falls as a result of hyperinflation, another money will necessarily emerge. It could be a commodity money like tobacco or grain, precious metals, specie like gold coins, the pound or dollar as

M. Nishibe, *The Enigma of Money*, DOI 10.1007/978-981-10-1819-0_5

an international currency, community currencies, corporate currencies, or electronic money. Whatever it may be, money and markets won't go away.

If there was only one kind of money in this world and it was hit by hyperinflation, then seemingly it would be logically possible to imagine a situation where money vanishes. The US dollar still keeps its hegemony as world currency through globalization. If it were hit by hyperinflation, some may anticipate capitalist market economy would collapse. However, since we have the euro, yen, or yuan in addition to dollars, a diversity of international currency won't be lost.

As we have seen, many corporate currencies, electronic monies and community currencies are coming into existence both in real space and cyberspace. More monies are likely to emerge and evolve from now on.

Money's diversity could be expected to stay with us even if a global currency were to be issued by the World Bank one day. Similarly, biological diversity persisted even after Homo sapiens came to stand at the top of the animal tree; and it still plays a crucial role.

Hyperinflation shows us that money is a sort of a virtual reality. It won't wake us up to reality; it just lets us move from one dream to another. Bubbles are also a virtual reality. Even if they burst, we should be aware that we will live in another virtual reality.

As we have looked through various examples in the previous chapter, bubbles take off either from resalable scarce goods of specific kinds and quantity like tulips or from marketable securities such as stocks. Examples of the former include land, paintings, and antiques. Other examples of the latter are convertible bonds, warranties, foreign exchange futures, or interest rates and derivatives like options and swaps. These products are obviously meant for speculation. Let's now discuss the problem of speculation.

5.2 The Difference Between Investment and Speculation

Bubbles and Speculation

What is the difference between investment and speculation? Although it is difficult to make a clear-cut distinction, we could generally define them as follows.

Investment is an activity of enterprises conducted in the expectation of long-term and permanent profit or income from producing goods and services (including distribution and information); speculation is a commercial activity seeking (especially short-term) gain from resale to take advantage of market price fluctuations.

Even though one can either borrow money from financial institutions or raise money in capital markets, the purpose and the term are in sharp contrast. Bubbles are a phenomenon deriving from speculation, not investment.

Some economists like Milton Friedman insist that speculation can be a useful economic activity for society because it enhances the automatic price adjustment function, i.e., "the invisible hand."

If speculation aims to "buy cheap and sell dear," it should raise market prices when it is below the theoretical equilibrium value, and it should go down when it is above that value. Consequently, the market price should quickly converge on the equilibrium price.

Friedman once applied to a bank for loan to sell pounds, knowing that sterling was sure to be depreciated. The bank declined his application citing that "it is not something a gentleman is supposed to do." Friedman reportedly got mad at the bank. For him, it is supposed to be a good deed when we contribute to society.

By the way, it is said that Frank Knight, Friedman's teacher, learned about this and told Friedman that he should no longer identify himself as Knight's disciple (an unconfirmed story told by Friedman's colleague, Hirofumi Uzawa).

Anyway, can we expect speculation always to bridge the gap between supply and demand, thereby ensuring stable prices?

Speculators buy as long as prices are expected to go higher in the future, regardless of whether the price is above or below its equilibrium value. As long as many speculators share this expectation, the logic of self-fulfilling ideas turns on and the price will actually increase. Then various explanations might be adduced to justify the strong outlook and various analytical techniques will be used to that end.

When some people lead the market in a certain direction, other speculators will follow. Prices, while going up and down in response to market news, increase up to a point, and then some speculators start wondering if it has gone too far and become bearish. As long as other speculators keep buying, however, the market will remain bullish. In this case, the price does not come down to equilibrium value, but further deviates from it.

Thus, the positive feedback of amplifying deviation continues until a majority of people turn bearish for some reason. When the boom turns to bust, the bubble bursts. This is no more than the collapse of the logic of a self-fulfilling idea.

In Chap. 4, we mentioned that George Soros explains this phenomenon with the help of a concept called "reflexivity." "Reflexivity" refers to a condition when the current decision is based on expectations of the future and future phenomena deriving from them interact. When the interaction reinforces a tendency, the financial markets swing between boom and bust, never converging to equilibrium. Soros thought that financial markets with functioning reflexivity are unstable and cannot be understood with a concept of equilibrium.

Speculation makes prices unstable rather than stable. Maybe some may insist that speculation, through the whole boom/bust cycle, helps prices to come closer to their equilibrium value. But this is unconvincing, since the very concept of equilibrium in mainstream economics is questionable. Given that speculation tends to make the market unstable, the suggestion that it contributes to society's well-being, as Friedman would have it, is absurd.

A Beauty Contest

To shed some light from another perspective, let's discuss John Maynard Keynes' famous "beauty contest." In *The General Theory of Employment, Interest and Money* (1936), Keynes defines speculation (short-term professional investment) as being based on expecting customary evaluations to persist for a few months, as against long-term investment for profit. It is more about outwitting colleagues and the crowd and letting others grab the joker. Having said that, he compares it to the following "beauty contest."

A beauty contest is a "newspaper competition in which the competitors have to pick out the prettiest faces from a hundred photographs, the prize being awarded to the competitor whose choice most nearly corresponds to the average preferences of the competitors as a whole."

As you might immediately realize, in order to win the prize, it doesn't make sense to pick a face based on your own taste or concept of beauty. To outwit others, you have to guess what the average opinion is, or which face gains the most votes. But others will have the same aim, so you have to expect in a higher level what average opinion expects the average opinion to be. This inference goes on indefinitely.

The "prettiest face" here is neither a woman of your own choice nor one who conforms to the contemporary standard of beauty. It is a "popular" woman who has been picked the most. The key to success here is to guess crowd psychology better than the crowd.

In this situation, people do not have a solid standard on which to base their expectations. They follow each other's picks and the result is likely to be fluid. When many people seek capital gain (trading profits) rather than income gain (dividends and interest) and more and more amateur speculators follow the ups and downs of popularity in the market, finance becomes unstable, like the beauty contest.

When he wrote his book, in the 1930s, Keynes found this tendency to be more prevalent in the United States than in Britain. In today's global capitalism, where pension funds and hedge funds pursue short-term speculation across borders, all the financial markets in advanced countries have become like the United States.

For this reason, financial instability often takes the form of capital flight, with dire consequences for the real economy in the form of recession and unemployment.

5.3 The Future of Money, the Future of Markets

Marx's and Keynes' Views on Money

Needless to say, speculation takes place because people wish to make and store more money. So is greed something we are all born with?

For example, if you have a lot more food than you need, most of it won't be consumed and will go bad. You don't wish to keep that much food. To obtain what you

want at any time you want, you need money. Since money exists as universal wealth, human beings will want to have more money. As long as money exists, it will be haunted by trading goods for a speculative profit.

Marx thought that in a capitalist economy where commodity production is dominant, money necessarily emerges and inevitably turns into capital as a form of self-augmenting value. It is not that people try to make money because they are greedy; they try to make more money because there is money.

According to Keynes, on the other hand, all our actions take account of the future, even though past expectations have been consistently overridden. Because there is no knowing what will happen next, probability is incalculable and uncertainty always exists. People always feel uneasy and fear about it. This underpins people's "love of money." At this point, money, despite changes in its value, becomes a "link connecting the present to the future" in the sense that we can always somehow have resort to it.

Although Marx and Keynes have different takes on money, they shared the view that we cannot get rid of money and that money causes speculation, and this is its inevitable reality or, rather, "virtual reality." Consequently, people will always seek money during a crisis or a depression following the bursting of a bubble.

Both were also convinced that it is not vested interests but thought that changes society, although it may take time. Marx repeatedly criticized the utopian idea of solely changing money to labor voucher that directly indicates the necessary labor hours to produce commodities, without touching the basis of capitalist market economy. In contrast to popular belief, he did not advocate replacing capitalism with socialist planned economy without money. Rather, Marx had in mind as an ideal society of communism an "association of free individuals" where economic society functions cooperatively, and quasi-money such as labor voucher might be used like "a theater ticket" (a gift certificate), but not as capital (Marx 1976, 188). In short, he thought it necessary to change the nature of both modes of production and money simultaneously.

Keynes evoking a proverbial example of extreme credulity, "the belief that the Moon is made of green cheese," said that "unemployment develops…because people want the moon" (Keynes, *The General Theory*, Ch.17, III). "The moon" here is a metaphor for something whose production is limited, but people cannot suppress their desire for it, like specie. And green cheese refers to the bills that a central bank can issue in whatever quantities they like. They can make people believe that green cheese (bills) is the moon (gold) and then produce and supply the nation with green cheese infinitely, putting the green cheese factory (a central bank) under the control of the state. That is to say, according to Keynes, rapid expansion of the money supply is the solution to unemployment.

This is all reminiscent of Milton Friedman's "helicopter money," when he suggested that dropping money out of helicopters for citizens to pick up was a sure way to restart the economy. In the United States, Ben Bernanke, the former chairman of Federal Reserve Bank, is known as "Helicopter Ben," because he launched the unconventional quantitative easing (QE) monetary policy after the bankruptcy of Lehman Brothers. In order to stimulate economic activity, the Federal Reserve implemented QE1 from November 2008 to March 2010 by buying $1.75 trillion of mortgage-backed securities, QE2 from November 2010 to June 2011 by buying $600 billion of Treasury securities, and unlimited QE3, which did not specify the

term or limit from September 2012. In January 2012, Bernanke first introduced an inflation target of 2 %. Many advanced countries followed. Japan implemented Abenomics, with an inflation target proposed by Prime Minister Abe.

Is Money Possible Without Booms or Bubbles?

If we cannot escape from the virtual reality of money, it should be necessary to think once again about how we can change money and the markets that money creates, and what would be desirable. The idea of replacing the sublime "moon" by ordinary "green cheese" anyone can make with milk has something in common with government bills other than Japanese banknotes, with community currencies and also with a crypto-currency like Bitcoin.

The principle of bubbles, although they presuppose the presence of money, is the same as how forms of money emerge, remain and collapse.

Money is not a natural "thing" like gold, silver, or rice, but social "matter." Both money and bubbles are the social "matter" that is formed, sustained and dissolved depending on the strength of our propensity to imitate others' wants and to follow others' rules. Institutions such as markets, credit, and bubbles owe their existence to the presence of money and cannot exist without it. Actually, we can say that current institutions like money, markets, or credit are the causes of phenomena-like bubbles.

Can we imagine money, markets, or credit without the instability of boom/bust cycles? This is an unsolved problem in economics. We should bear it in mind when thinking about money as an institution.

Three Advantages and Three Shortcomings of Market Economy

Why is capitalist market economy so unstable? Let's think again about the advantages and shortcomings of the current capitalist market economy.

There are three advantages to the market economy we have:

1. Free price competition in the market lowers commodity prices. Consumers benefit from that.
2. New technologies and products are introduced by businesses in the course of innovation. This spreads out, commodity prices fall, quality improves, and diversification becomes easier.
3. Markets founded on contracts and free trade encourage political freedom. If the market is eliminated, political power becomes concentrated on the center with a planned economy and suppression of individual freedom likely. The market, by negating plans and intervention by governments, is a preventive measure against statism and dictatorship.

It is not the market, however, but the law (influenced by changes in social laws as well as lobbying by businesses and their associations) that determines, based on

morality or custom, what should be considered to be private property and what should be subject to trade and investment.

These three are the primary advantages of the current free market economy, but there are more. Money separates buying from selling. The law of one price doesn't hold and some products are left over, while others are sold out. No society is well adjusted as a whole. We mentioned that the market is similar to the Internet. This does not mean that either is stable or efficient. Unexpected and radical change can happen at any time.

The shortcomings of markets are as follows:

1. Free markets increase the instability of economy and finance and amplify economic cycles. In a boom period, banks expand lending by creating credit and the money is directed toward various kinds of investment. If money goes to meet real demand in the form of investment in equipment, the economy will grow sustainably, but income opportunities will diminish at some point. Then a speculative fund heads to stocks and real estate and the bubble grows. The interest rate goes up and the bubble bursts, leaving tons of bad debt behind. Recession creeps in out of financial crisis. Due to a speedup of the economic cycle, bankruptcy, and unemployment increase, inequality grows and society becomes unstable.
2. When businesses seek price competition and innovation for profit, they do not think about the impact on the natural environment, on human bodies, or on society. As described above, market competition may bring about a diversity of technologies and products, but it creates problems as well. So a diversity of technologies and products is not desirable for itself. Businesses also stimulate consumers' desires with advertising and promotion. As a result, our lives become more homogenous, making it difficult for us to choose different lifestyles.
3. As trade using money expands in the market, human relationships may be weakened, and the quality of our communications deteriorates. Market economy's logic of the survival of the fittest does not take care of the weak or of losers, thereby reducing the morale of society as a whole.

The Focus Is Only on the Market's Shortcomings

We see many problems in globalization. This is because we see the market's shortcomings more than its advantages. So how could we overcome those shortcomings?

The key here is money. If money creates markets, then by changing money we could change their nature. We need to question the fundamental essence of money, if we wish to form a new type of money, while removing the shortcomings of its existing form.

In recent years, more attention has been paid to microcredit, community currencies, government bills, depreciating currency, and Islamic banking and finance with no interest. Bitcoin and other crypto-currencies are also now all the rage.

While money is a way of creating markets, it is also an essential component of capital. Thinking about money should lead us to reflect not only on the quality of markets, capital, and economy but also about our culture and ethics.

To change the quality of the money, we have to change not only the market and economy but also our culture and ethics.

Money and "Trust"

Conventional money, emerging out of self-fulfilling ideas through custom and expectations, has been based on a conception that agents only think about their own economic interest. But in reality, people are also interested in community, values, philosophy, and culture that sustain their relations with those around them.

A human being is not just a shallow rational economic being. We need to go back to understanding humanity in terms of contradictory elements governed by plural rules, such as instincts, emotions, will, and reason. It was not until we comprehended human beings in this way that we could see a unique "money" could emerge through the "self-fulfillment of trust."

Let us brief on the money called "community currencies" becuase it may be useful in thinking about the future of money. Currently, thousands of them all over the world, and hundreds in Japan, are spontaneously created and operated. A community currency cannot be converted to legal tender; it circulates only within a certain locality or community and bears no interest. Participants spontaneously exchange goods and services using it as a medium to activate the local economy and community.

More specifically, it aims to establish an autonomous and sustainable local economy by enhancing intraregional circulation of money; to provide a community solution to declining real economy due to capital flight, unemployment, and bankruptcies; to enable trade in such services as nursing, housekeeping, raising kids, and volunteer activities, which are not traditionally tradable with conventional money; and to express, communicate, and share diverse ideas and values relating to freedom, justice, cooperation, ecology, and feminism.

A community currency is the special "money" based on "trust" in a community made up by all its participants. Trust here is not the same as relief. "Relief" refers to an exclusive mindset, in which you can expect acquaintances to respond to you in predictable ways and you won't be hurt.

On the contrary, "trust" is a more open ethical attitude. Even when you meet someone you don't know at all, you start by believing in them in the first place. Participants in a community currency often do not know each other, so they must start by trusting. Assuming that other participants understand and actively commit to the economic and cultural value of the currency enables it to be accepted and circulate. As more people participate, the community currency will expand its circulation and eventually form a new type of market based on trust within the community.

Chapter 6
The Crisis of Capitalism and the "Quality" of Money

6.1 The Meaning of Occupy Wall Street

In September 2011, many young people began demonstrating in Wall Street which is famous for the location of the New York Stock Exchange, and the movement subsequently spread around the world. The messages and classes of the Occupy Wall Street (OWS) movement were not monolithic, and therefore they did not constitute a coherent political group. What were they angry about and what did they demand?

Michael Moore's film, *Capitalism: A Love Story*, offers some insight into this. At the end of the movie, he wraps Wall Street's financial institutions in yellow tape saying "CRIME SCENE DO NOT CROSS." This perfomance seemed to be the prototype of the OWS demonstrators.

What was the movie's theme? At first, Moore shows people who could not repay their loan after the subprime bubble burst and were forced out of their house. They lost their homes and had no place to live at. These ordinary people were hit really hard.

What about the big corporations? In September 2008, Lehman Brothers was made a scapegoat. But as stock prices collapsed all over the world and the financial crisis provoked a chain of bankruptcies, large housing-related financial institutions, investment banks, and insurance companies were all relieved by the Troubled Asset Relief Program (TARP) in the next month. The executives of these large firms that received public funding were criticized for their high level of compensation. After a while, however, when some businesses like Goldman Sachs recorded highest profits ever in the following year, ten banks had already repaid public funds in June and revived their custom of excessive compensation.

In Moore's movie, there is a scene where a bereaved family is informed of the fact that Walmart covers life insurance for all its employees and gets paid insurance money. Although it is legal, it shows up the greed of these large corporations. The bereaved family, who had not been aware of the insurance provision, was furious. This was not because they did not receive the money. They were angry about Walmart covering their employees' life insurance without informing them and that

M. Nishibe, *The Enigma of Money*, DOI 10.1007/978-981-10-1819-0_6

it still receives this money making some profits. It clearly shows that Walmart views its employees only as a tool to make money.

The financial institutions that sold subprime loan derivatives without proper explanations of their high risks should be more responsible than the individuals who borrowed loans and went bankrupt. Nevertheless, the people who lost a home or a job did not receive any relief, while large corporations and their executives did. This is not fair. Consequently, more wealth is going to be concentrated in large corporations and the super rich. There is not only inequality of economic wealth as a result but also unfairness of unequal opportunities between large corporations and individuals.

The US Office of Management and Budget disclosed data that highlights this trend. From 1979 through 2007, the after-tax income of the top 1 % increased by 275 %, and their share of national income doubled from 8 to 17 %, while the income of the lowest 20 % increased only by 18 %. The income of the middle class (comprising three in five of the population) only increased by 40 %. The income gap between the wealthy and the poor widened in the 30 years leading up to the subprime crisis, and it has probably widened even more after the crisis.

According to a public opinion poll by *The New York Times* and CBS News, two out of three people in the United States hope for more equal income distribution. Warren Buffet, a famous investor, proposed to increase the tax rate for high income earners. Another poll says that rich people with investments of more than $1 million support a higher tax rate for the rich. In France, Germany, and Italy, the wealthy also claimed that they should pay more tax.

Did the OWS demonstrators only ask for correction of economic inequality or for realization of more equalization? If so, the problem would then be fixed by raising tax rates for the wealty and strengthing the measures for income redistribution. The Democratic Party tried to guide the nation in this direction and the demonstrators seem to have been persuaded and calmed down.

The initial anger of OWS, as in Moore's movie, seemed to me, however, to be directed toward a more radical problem.

6.2 Symptoms of the Crisis of Capitalism

Global capitalism has turned to deregulation and liberalization over the past 30 years. As a result, financial crises now happen more often. Every time a crisis takes place, the state bails out large firms and financial institutions and the EU has saved Greece and Cyprus. These large firms, financial institutions, and states, which may trigger systemic risk shaking the entire financial system, are said to be "too big to fail."

The truth is that states and unions of states patch up breakdowns in the principle of self-responsibility by referring to the need to secure "the financial system" against collapse. Here opportunity is massively unfair: large corporations are saved while individuals are not. This shows that global capitalism, which is supposed to be founded on the principle of competition and self-responsibility, has become a fundamentally unfair economic system. This must be a much bigger problem than economic inequality as a consequence of free competition, because it means self-

contradiction of capitalism. The OWS demonstrators headed to Wall Street in New York rather than such political centers as the Capitol or White House in Washington, DC, because Wall Street as the financial center is precisely the source of this unfairness. They intuitively accused the home of that unfairness, as if a crime had happened there. They questioned the fairness of the rules by which we play the game of capitalism.

So why do some of the wealthy endorse tax raises on themselves? It is probably because they fear that criticism will be directed, rather than toward economic inequality as such, toward the more serious issue of unfair rules of the game called capitalism, which could lead eventually to explosion of discontent and final collapse of capitalism itself. Although the fundamental problem here is injustice of unequal opportunities as well as fraudulent changes of the rules after the play, they want to swich the focus of topic to correcting economic inequality as a consequence of free competition. The wealthy are getting aware that the fundamental problems of current system the rich gets richer and the poor gets poorer lies in capitalism's unfair rules today and anxious about the breakdown of the whole system.

These issues taken together represent symptoms of the crisis of capitalism. After the bankruptcy of Lehman Brothers, those problems were not solved; they were just carried over.

6.3 The Crisis in the United States and Japan

The Unites States and Japan still have huge fiscal deficits. In France, they initially pushed to raise taxes on the wealthy, but no such discussion has been held elsewhere. Japan finally raised the consumption tax (from 5 to 8 %), a tax hike for everyone.

In the United States, helped by QE, the unemployment rate fell to 7 % in December 2013, and the Dow Jones Industrial Average hit a record high. Scaling back QE (tapering) has been implemented since then in the form of purchasing fewer mortgage-backed securities and Treasury securities. The exit strategy from QE is said to be very difficult, so we will have to see how it goes.

In the United States, the monetary base at the end of 2013 was beyond three times the level after the Lehman Brothers bankruptcy. The current prosperity of the United States has been barely achieved by the Fed forcefully injecting large amount of money into the economy by way of purchasing national bonds and mortgage-backed securities. The economy's lift has in a way been sustained by the self-fulfilling idea that people and businesses believe in QE's economic effects, and investment and consumption are stimulated. Some have expressed concern that unlimited QE with a 2 % inflation target might cause hyperinflation. This has not been the case, however. Rather, the concern should be with deflation. However gradual the scaling back of QE might be, once it goes beyond a certain threshold, self-fulfilling expectations about QE by professional investors may collapse and that could invite the public's self-fulfilling customs to collapse as well. If so, a quiet (rather than exuberant) bubble enabled by self-fulfilling ideas will collapse and crash. Even if you gradually decrease the amount of drugs given to an addict, he will

suddenly suffer from withdrawal symptoms at some point. The negative impact of a scaling back of QE could abruptly appear beyond a certain threshold. There is no denying the possibility that a default crisis caused by the problem of limitation of liability and a linked dollar crisis simultaneously happen.

There is one thing we can say, for sure. Unlimited QE with an inflation target is the ultimate monetary easing. If this does not work, no further monetary easing under the existing financial system can work. The ultimate weapon has been used already; we don't have any more measures. I wonder if many people are seriously aware of the risk.

The same can be said of Abenomics. The Japanese Prime Minister Abe said he would deploy "Abenomics" to bring about economic recovery. The "three arrows" are (1) bold financial policy, (2) agile fiscal policy, and (3) growth strategy to stimulate private investment. The core is the first. The "bold financial policy" is to set the inflation target to overcome deflation and to implement bold QE measures until it hits the inflation target. The inflation target is set at 2 %, and it aims to overcome deflation and correct the strong yen by way of unlimited QE. Abe even said that if the Bank of Japan does not cooperate while insisting on its own neutrality, he would revise the Bank of Japan Act.

Soon after the implementation of Abenomics, stock markets quickly recovered and the yen got weaker. From this perspective, Abenomics was effective. In December 2013, the government said in its Monthly Economic Report that prices were now stable and finally took the word "deflation" out of the report after 4 years and 2 months. Abe, although he did not make his "overcoming deflation" statement, looked confident. The stock market, however, has been stagnant since January 2014 and it is not clear that the economy has recovered. Last minute demand before the implementation of consumption tax raise disappears after April, so there is risk of shrinking again.

We can say Abenomics is a copy of Bernanke's QE and inflation target. The big risk, however, is that the ultimate weapon has already been thrown in, and the same measure will not work again if deflation kicks in.

6.4 The Quality of Money and Its "Freedom to Evolve"

Keynes suggested we should make people believe that green cheese (bills) is the moon (gold) and produce and supply the nation with as much green cheese as we like by keeping the green cheese factory (central bank) under state control. But people who once believed the moon could be made of green cheese may come to see the poor quality of freely supplied green cheese and stop regarding it as the moon. In which case, what did Keynes think could happen? Did he think it could lead to an even worse recession?

For Hayek, intentional inflation by states led to the degradation of money and was the biggest cause of its poor quality. In order to correct this state of affairs, according to Hayek's *The Denationalization of Money*, he suggested that we should denationalize money, let private banks and corporations issue money on their own,

introduce competition between currencies based on quality (stable price) not quantity (money supply), and let good money survive and drive out bad money. The current discussion of inflation targets is only centered on using QE for economic recovery, i.e., the quantity of money, and completely misses out the quality of money emphasized by Hayek.

A bubble economy collapsed in 1990, followed by a long recession known as "Japan's lost decade" and "lost two decades" and world financial crises like the bankruptcy of Lehman Brothers and the European sovereign debt crisis of the past several years. Deregulation and the liberalization of financial products have progressed. At the same time, speculation and casino finance have been accelerated, constantly amplifying financial instability. Due to the continued recession, we have not yet seen inflation, but the foreign exchange rates go up and down, the price of energy and food has soared. There is no sign of stabilizing the value of money, the prerequisite of Hayek's "good money". Rather, the large amount of money pumped in by reckless QE only goes toward speculation in bonds, stocks, and foreign exchange, while little goes into durable investment. The yen, dollar, and euro, it does not matter. All these monies favor only investors and speculators; they are "bad money" for anyone making a life by working.

According to Hayek, good money has stable money value. But at present, people may seek any other qualities of money than stable value. We should discover through competition what kind of qualities people are asking for in money.

We have seen states and unions of states saved using public money repeatedly and arbitrarily as a result of the systemic risks that financial liberalization has brought about. This completely contradicts the logic of liberalization that is preached. It appears many people are now beginning to realize that the real problem is concentrated on the monopoly of money by states and the currency integration that support this liberalization.

Of course, the problem is not just the monopolistic issue of money by central governments. It is also related to such questions as arbitrary monetary and fiscal policy, the loss of soundness as shown by fiscal deficits, and the entire state currency system constituted by central banks' base money supply and private banks' credit creation of deposit currency. The root cause of all these problems is the nationalization of money. The cozy relationship between the economic currency system and the political state system creates and deepens such problems inherent in market economy as the boom/bust cycle and recessions and unemployment it entails.

To solve such problems, we need new kinds of institutional design permitting a more desirable relationship between the constitutive elements. We don't just need deregulation and liberalization but also to create laws and rules that will encourage better institutional forms to emerge. In other words, the issue here is not "freedom to choose from a given set of choices" but "freedom to choose other choices" – "the freedom to evolve." Institutional design and policies based on freedom and evolution should be open to the discovery of the unknown as well as emergence of novelty.

6.5 What Kind of Money Will Be Chosen and Survive?

We cannot help being pessimistic about certain aspects of the current monetary system coupled with globalization in progress. At the same time, however, more and more new monies have appeared in the past decade. Community currencies are one popular type of money that are implemented all over the world. Citizen groups, NGOs, municipalities, or chambers of commerce issue currency in their own name to stimulate the local economy and community. In Japan, e-money – whose value is stored as digital information on a server, personal computer, or on the Internet, an IC card, or cell phone – has quickly spread as a means of settlement between businesses or online. Another example is the crypto-currency, Bitcoin, which has introduced the unique concept of mining money.

Hayek only thought of private banks and businesses as issuing institutions of money, only of the stability of money value as a condition for good money, only of economic purposes as the rationale of users. But today issuers of diverse forms of money and quasi-money include nonprofit organizations like citizen groups. Noneconomic incentives such as stimulation of the local community coexist with economic motives like convenience or incentives linked to reward points. If the denationalization of money and a free money movement aiming at more competition on quality among many monies progress, their scope should be wide enough to include not only exchange principles based on liberalism and selfishness but also reciprocity principles based on associationism and altruism.

Globalization today is not moving toward convergence to the dollar as a single key currency. Rather, we are witnessing world competition between the dollar and the euro, the yen and the emerging yuan as well as emergence of diversified private currencies of e-money, local gift certificates, community currencies, and crypto-currencies like Bitcoin. Various kinds of monies continue to coexist through competition in an institutional ecosystem.

Therefore I expect money will leave behind reliance on quantitative competition, as in QE or Abenomics, and move toward competition over quality. It is not possible to know in advance what kind of quality in money will be chosen and survive. New types of monies would reinforce unconventional noneconomic incentives – social, cultural, natural, human, or ecological – and some of them may survive.

Let us keep our hopeful eyes on if the dynamics of the self-fulfilling ideas that sustain money will create new markets with different properties and a variety of incentives.

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M. Nishibe, *The Enigma of Money*, DOI 10.1007/978-981-10-1819-0