

Chapter 15

Public Money and Sustainability

This final chapter¹ searches for a better design of our economic system toward our sustainable futures. First, it briefly reviews our public money system analyzed so far in Part IV in comparison with the current debt money system in Parts II and III in terms of its system structures and behaviors. It is reconfirmed here that the public money system works better than the debt money system in terms of monetary and financial stability, government debt and equality in income distribution. Then, the MuRatopian economy that was proposed in the early 1980's as a new economic paradigm suitable for the coming information age is revisited for comparison. Based on our new monetary analysis in this book, it turns out that the economy has been built without paying attention to the monetary system. Finally, in order to create the best system design for sustainability, the public money system is incorporated with the MuRatopian economic system.

15.1 Public vs Debt Money System Structures

We have used system dynamics as a new method of analyzing macroeconomic system structures and behaviors. The main reason for using system dynamics is because the behaviors of any system are dependent on its system structures. What's the best design of our economic system, then, which attains sustainable behaviors? This chapter tries to answer this question.

So far we have examined two macroeconomic systems: debt money and public money systems. The superiority of one system over another will depend

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on the economic criteria we choose. Before discussing specific criteria, let us first briefly compare the system structures of these two monetary systems.

The public money system has been proposed by the American Monetary Act as discussed in chapter 12 in order to restore the original proposals of the Chicago Plan and 100% Money Plan, both proclaimed in 1930's to avoid such economic disasters as the Great Depression in the future. The proposal of the American Monetary Act consists of the following three features.

- Governmental control over the issue of money
- Abolishment of credit creation with full (100%) reserve ratio
- Constant flow of money into circulation to sustain economic growth and welfare

The macroeconomic system that meets these three conditions is called the *public money* system in this book, while the current monetary system is called the *debt money* system. Table 15.1 compares system structures of these two systems. Let us examine their structural differences one by one.

	Public Money System	Debt Money System
Money Issuer	Public Money Administration	Central Bank
Its Owner	Government (Public)	Private Banks and Financiers
Bank Reserves	100% Reserve	Fractional Reserve
Money Supply	Public Money directly put into Circulation as Economy grows Private Banking unaffected	Base Money: by Central Bank Deposits: by Bank Loans Money in Circulation: by Public
Interest	Interest-free	Interest-bearing Debt
Economic Policies	Public Money Policy (Public Money Financing)	Monetary Policy: Central Bank Fiscal Policy: Government

Table 15.1: Public Money vs Debt Money System Structures

Money Issuer and its Owner

Under the current debt money system, money consists of coins and paper notes. Coins are minted by the government, and bank notes are printed by the central bank. Money of this kind is called base money or monetary base M_0 , and its large amount is being used as currency (or money) in circulation as analyzed in chapter 5. Since coins only constitute a small amount of the base money, its large amount is bank notes printed for central issuance.

Who owns our central banks, then? To the best of our knowledge, for instance, the Federal Reserve System in the US is owned by its member Banks, which are in turn owned by private bankers and financiers. That is to say, it is 100% privately owned. The Bank of Japan is 55% owned by the Government and the remaining 45% are privately owned. The Bank of England was nationalized in 1946.

Under the public money system, money such as paper notes and coins are solely created by the Public Money Administration. As such, the money issuer is completely owned by the government, or the public.

Bank Reserves

Under the debt money system, commercial banks are obliged to hold only a fraction of deposits as bank reserves with the central bank, and the remaining amount are loaned out as if the deposited money belongs to the banks. This money management is called a fractional reserve banking system, which empowers the banks to create credits (as deposits) out of nothing. Again, this process is fully analyzed in chapter 5.

Under the public money system, commercial banks are fully obliged to keep the whole amount of deposits with the Public Money Administration. Thus, they begin to perform a traditional role of bankers as financial intermediaries. On this full reserve basis, demand depositors can no longer expect interest payment from their deposits. Instead they can be requested to pay service fees for their transaction services offered by the banks. These service charges become an important source of income for banks.

The 100% reserve principle only applies to the demand deposits or checking account deposits. This means banks can still make loans out of time deposits, which is the amount of money consumers need not use for their daily transactions, and therefore save as investment. Consumer and business saving thus becomes the main source of loanable fund for banks to make investment at risk. In other words, time deposits are the money invested to the banks by savers for higher returns in the future. Accordingly, the banks own the customers' deposits, and the principal amount may no longer be fully guaranteed.

Money Supply

Money supply is herein defined as the sum of currency in circulation plus demand deposits, which is usually denoted as M_1 . When time deposits are added to M_1 , it is denoted as M_2 . Currency in circulation, which consists of bank notes and coins, is the amount of cash used by the public (mainly consumers) for their daily transactions. Coins constitute only a negligible portion of 0.9%, while bank notes constitute about 16% of M_1 in Japan. On the other hand, demand deposits are created by bank loans to households as consumer loans and mortgages, and to businesses and producers as commercial loans. These bank loans constitute more than 80% of M_1 in Japan.

The money supply under the public money system is provided by the Public Money Administration as public money which consists of government notes and coins, and publicly-issued digital money. Since banks no longer create credit, demand deposits are only made by depositors out of their public money. Accordingly, we have $M_0 = M_1$ all the time.

Interest

Under the debt money system, base money M_0 is only created when someone comes to the central bank to borrow; that is, when government indirectly bor-

row from the central bank through the central bank's open market operations at interest, or when commercial banks borrow from the central bank at a discount rate. Among these borrowers, only the government can be the persistent borrower to keep increasing money supply for the growing economy. Accordingly, taxpayers are forced to pay interest constantly to the central bank and commercial banks who own government securities.

Demand deposits of M_1 are created when commercial banks make loans at interest. Accordingly, borrowers such as households and producers are incessantly forced to pay interest to bankers. To pay interest as well as principals, borrowers are forced to earn extra money, thus forcing increased economic growth, with further destruction of the environment, or simply by borrowing more, thus accumulating even further debts.

Under the public money system, public money is constantly made available without debt issuance, because public money assumes a true public utility function for supporting both commercial transactions and public welfare.

Economic Policies

Under the debt money system, the economic policies available to restore market equilibrium out of recession, inflation and unemployment are traditional Keynesian monetary and fiscal policies. Monetary policy by the central bank primarily targets price stability by further targeting changes in interest rates such as the federal funds rate (on which all other interest rates are based in the US) of overnight interbank liquidity transactions through the quantity of base money M_0 . This is done with a hope that interest rate changes encourages or discourages investment, which in turn affects the economy's aggregate demand. Fiscal policy by the government directly changes government expenditures through spending or taxing practices so that the aggregate demand will also be affected.

After the bursting of the financial and real estate bubbles in the 1990's in Japan, followed by the worldwide financial crises in 2008, these traditional Keynesian policies mentioned above entirely failed to restore the economy's equilibrium. As a result, the central banks have been forced to introduce non-orthodox policies such as paying interest on reserves and so-called quantitative easing (QE), through which bank reserves, a portion of M_0 , are directly increased by the central banks' direct purchases of governmental and commercial securities, primarily held by commercial banks.

Under the proposed public money system, needed restorative economic policy initiatives becomes very simple and direct, such that the quantity of public money in circulation can directly manage to attain price stability, through the spending and taxing practices of the government. Additionally, public money in circulation needs be constantly increased as the economy continues to grow. Since public money enters economic circulation interest-free, the government and Public Money Administration need no longer utilize traditional policy tools such as interest rate and discount rate. Determination of all interest rates is entirely left to the market activities of the private sector.

15.2 Public vs Debt Money System Behaviors

System structures of the public and debt money thus framed above produce very different system behaviors. Let us examine how they behave dissimilarly and divergently.

	Public Money System	Debt Money System
Monetary Stability	Stable Money Supply Stable Price Level	Bubbles and Credit Crunches Inflation & Deflation
Financial Stability	No Bank-runs	Business Cycles (Booms and Depressions)
Employment	Full Employment	Involuntary Unemployment
Government Debt	No Government Debt	Built-in Debt Accumulation → Recession & Unemployment
Inequality	Income Inequality between Workers and Capitalists	Income Inequality between Financiers and Non-financiers
Sustainability	Sustainability is Possible	Accumulated Debt → Forced Growth → Environmental Destruction

Table 15.2: Public Money vs Debt Money System Behaviors

Monetary Stability

Money supply under the debt money system is very unstable. First, currency in circulation is determined by the capricious minds of consumers and producers for the liquidity demand against risky financial assets. Second, demand deposits are at the mercy of bankers' attitudes to make loans and create credits. Under such circumstances, the central bank can only control the base money of M_0 , but has no direct power to control money supply M_1 . For instance, let us consider money multiplier equation discussed in chapter 5 here again by assuming the equality of high-powered money and monetary base such that

$$\text{Money Supply } (M_1) = \frac{\alpha + 1}{\alpha + \beta} * M_0 \quad (15.1)$$

where α is the currency ratio and β is the reserve ratio.

When the currency ratio and required reserve ratio are set to be $(\alpha, \beta) = (0.2, 0.1)$, and $M_0 = 100$, money multiplier becomes $(0.2 + 1)/(0.2 + 0.1) = 4$, and money supply becomes 400. Now suppose the currency ratio increases to 1 from 0.2 due to the recession and consumers and producers begin to prefer liquidity at hand. Money multiplier drops to $(1 + 1)/(1 + 0.1) = 1.82$, and money supply contracts to 182, far less than half of the original amount!. This is an example of the so-called *credit crunch*. To be worse, this sudden contraction of money supply or credit crunch is out of the central bank's control.

Under such circumstances, the only policy left to the central bank is to increase base money M_0 desperately through quantitative easing (QE) policy.

For instance, suppose that the base money is doubled such that $M_0 = 200$ as being hastily maneuvered by the Fed and Bank of England after the financial crises in 2008. In our numerical example here, this QE policy only sustain money supply at the level of 364 ($= 1.82 \times 200$), which is alas still below the original level of 400. Thus, our economy is not stimulated and the central bank's QE policy failed.

This monetary instability inherent to the debt money system was already pointed out by the economists who proposed the Chicago Plan in 1930s as already discussed in chapter 14:

(9) Fractional reserves give our thousands of commercial banks the power to increase or decrease the volume of our circulating medium by increasing or decreasing bank loans and investments. ... As each bank exercises this power independently without any centralized control, the resulting changes in the volume of the circulating medium are largely haphazard. This situation is a most important factor in booms and depressions [11, p.19].

This monetary instability under the debt money system becomes the root cause of bubbles and credit crunches. In Parts II and III we have repeatedly observed how our economy gets affected by the amount of currency in circulation. Specifically, many business cycles are convincingly shown by our macroeconomic simulations, based on the accounting system dynamics method, to be triggered by the instability of money

On the contrary, the proposed public money system does not cause such monetary instability, and the amount of public money becomes stable, because under the 100% reserve we have $\beta = 1$ and money multiplier becomes unitary so that we have money supply $= M_0$. That is, we have

$$\text{Money Supply } (M_1) = \frac{\alpha + 1}{\alpha + \beta} * M_0 = M_0. \quad (15.2)$$

Money supply M_1 can no longer be affected by the capricious behaviors of consumers and producers to demand for liquidity. As a result, the money supply in our example becomes the same as the monetary base of 400, which is put into circulation by the Public Money Administration. Accordingly, the amount of the money supply never gets contracted and continues to be used for economic transactions. In this way, the public money system becomes free from inflation and deflation, and the general price level will be easily stabilized because currency in circulation is completely under the control of the Public Money Administration.

Financial Stability

Under the debt money system, our economy is not free from business cycles such as "booms and depressions" as discussed above, which surely causes financial instability at the microeconomic level, affecting bank activities. Moreover, we identified the existence of the reinforcing loop of credit creation called "Bankers'

Greed” and the balancing loop of credit crunch called “Income Inequality” in chapter 14. Due to these opposing loops, unstable behaviors of economic growth and inflation are inescapably triggered. Combined with monetary instability, the economic system of debt money is constantly struck by bubbles and busts, and results in financial system instability.

The public money systems eliminates such financial system instability, and as a result, no bank-runs can occur. Moreover, the above two opposing loops that causes credit creation and crunch are thoroughly eliminated, subduing “booms and depressions”.

Employment

Under the debt money system, our economy is repeatedly hit by booms and busts, or recessions and under such circumstances involuntary unemployment becomes inevitable. Under the public money system, booms and busts can be avoided, which implies that the involuntary unemployment can be constantly mitigated. Moreover, public money policies discussed in chapter 13 can directly reduce the unemployment level. To attain full employment, however, the economy needs be further transformed to the MuRatopian economy as discussed below.

Government Debt

Our analyses in Parts II and III have revealed that the debt accumulation of government is built into the debt money system simply because government is destined to keep borrowing to provide sufficient money supply for the growing economy. This built-in effect is already pointed out by the economists of the Chicago Plan:

(17a) Under the present fractional reserve system, the only way to provide the nation with circulating medium for its growing needs is to add continually to our Government’s huge bonded debt [11, pp.39,40].

Sooner or later, government is forced to reduce the accumulated debt to avoid its total default. The debt reduction can only be done by spending less (which is called an austerity economic policy) or levying increased taxation. Whichever policy is taken it triggers economic recessions as demonstrated in chapter 13, which in turn reduces tax revenues, accumulating government debts furthermore. This paradox is revealed by the causal loop analysis as “Liquidation Traps of Debt” in chapter 13. In other words, our debt money system becomes dead-end, or “debt-end” as commented by the Congressman Denith Kuchinich to my US Congressional Briefing presentation on July 26, 2011.

No such debt accumulation can occur under the public money system due to the public money financing as pointed out by the Chicago Plan economists:

(17a) Under the 100% reserve system the needed increase in the circulation medium can be accomplished without increasing the interest bearing debt of the Government [11, pp.39,40].

They called this effect “a by-product of the 100% reserve system”.

Inequality

In order to attain an understanding of the root cause of inequality in income distribution, it’s essential to classify sources of income into interest, profits (such as dividends and rents) and wages. Those who receive interest income are called financiers and those who receive profits are called shareholders(capitalists) and employers here. Meanwhile, workers receive wages. Figure 15.1 illustrates these three groups. Inequality in income distribution within these groups is not brought into our discussions.

Under the debt money system, equity distributions between banks and non-financial sectors tend to broaden as demonstrated in chapter 6, due to the flow of interest income toward bankers. In fact, since the financial crises in 2008, rent-seeking inequality between financiers and non-financiers has been rapidly widening as pointed out by the Nobel laureate economist Joseph Stiglitz recently in [65].

This type of income inequality is completely eliminated under the public money system. However, the inequality between workers and shareholders (and employers) still remains. To remove this type of inequality, the economy needs to be further transformed to the MuRatopian economy as proposed in Yamaguchi [78].

Sustainability

Under the debt money system, producers and government are obliged to borrow at interest, and their debts continue to accumulate exponentially due to the compound interest rate. As shown in chapter 1, a doubling time of debts is a constant period of about 70 divided by the interest rate. For instance, it is about 14 years if the interest rate is 5%, and our debts continue to double every 14 years!

Under such circumstances, borrowers are forced to pay an increasing amount of interest as well as principals. If borrowers are producers, they are forced to produce more, leading eventually to a complete depletion of non-renewable resources and destruction of en-

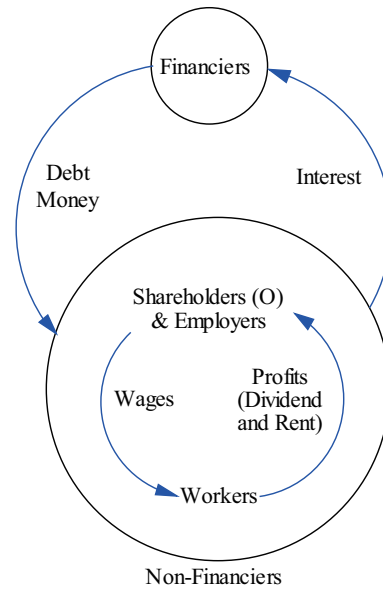


Figure 15.1: Inequality under Debt Money System

vironment. If government is a borrower, it is forced to borrow more to pay interest by issuing government securities at a faster speed, potentially leading to an eventual default of the government. In short, the debt money system is, in principle, unsustainable. Yet, much of the literature on sustainability fail to point out the inter-relationship between the debt money system and both economic and environmental non-sustainability.

On the other hand, the public money system can effectively remove or reduce the above causes of non-sustainability. Interest rates may be reduced partly due to the elimination of interest income to financiers, and partly due to increased competition among banks for making loans, reducing the burden of interest payments by producers and consumers. Government can now become debt-free, and needs not be constrained by the tax-and debt budgetary spending, because it can put the desired amount of public money into circulation for the welfare of the public, such as preservation of the environment.

We have now completed the comparative analyses of system behaviors between public money and debt money. If we are rational, more than 99% of non-financiers will prefer the public money system. Moreover, as pointed out in chapter 12, our current debt money system is suffering from a systemic failure such as the impasses of defaults, financial meltdown and hyper-inflation, and only the alternative system of public money can cure our systemic sufferings of debt money. In this sense, the public money system could be a savior to that less-than-1% of us who are financiers as well.

Can we say that the public money system is an ideal economic system, then? Not necessarily. For instance, inequality between shareholders and workers, and therefrom unemployment, still remains. Hence, our off-road journey to search for a better design of economic system cannot finish here.

15.3 The MuRatopian Economy Revisited

My search for a better societal economic system design has started, as briefly discussed in Preface, during my UC Berkeley days in the early 1980's. I was striving to envision a future economy as a new social design in place of the capitalist economy that was getting effete under the coming transition toward the so-called information society. The future economy of my new social design was called the MuRatopian economy in Yamaguchi [78].

Consequently, it would be worth here, I believe, revisiting this design for a new economy with regard to the public money system that is posed as an alternative to the debt money system of today's capitalist economy. The main features of the MuRatopian economy can be summarized from the excerpts below.

However, the re-unification of (1) man and nature, (2) workers and capitalists, or employees and employers, (3) savers and investors, and (4) producers and consumers will not be realized simultaneously. Moreover, no necessity exists to do so.

In any case, we see a new social design in the vision of the re-unification of (1), (2) and (3), and only a partial re-unification of (4). That is, human beings will begin to consider themselves as an inseparable part of nature and will try to live in harmony with nature according to nature's rhythm - the re-unification of (1). Both capitalist and working classes being abolished, all members of the society (and of the globe) will begin to "possess" (and share) their own properties and production units. As a result, the labor market as an exploitation market will eventually be eliminated together with the concept of wage and profit as a category, and Marx unfairness caused by the existence of a working class will also be gone forever - a re-unification of (2). Then, all members of the society (and of the globe) will begin to self-manage their own production units and will make decisions such as savings, investments and consumption by themselves in a co-operative and democratic manner. Let us call such people co-operatively working consumer-workers, in short, co-workers. Accordingly, co-workers will begin to self-manage their own funds (that is, basically they save to invest), and at least the financial capital markets which we observe in a capitalist economy will be gone forever - the re-unification of (3).

We will call such a re-unified future economy *MuRatopian economy* where co-workers work co-operatively in communes, communities, local organizations, and global organizations in harmony with nature. The Japanese word *mura* literally means village. I have envisioned the future society in the spirit and practice of a Japanese village where village people live in a self-sufficient community, help each other co-operatively at the busiest time of harvest, and respect nature's way. The one character word *mura* may also be considered as consisting of two different characters: *Mu* and *Ra*. *Mu* implies "nothingness" or "emptiness" - the most fundamental concept of Zen Buddhism, and *Ra* means "being naked" or "having no possession". Accordingly, I have associated the implications of *Mu* (nothingness) and *Ra* (no possession) with *mura* (village), because I have further envisioned the mind of future society in the combination of these concepts. *-topia* is from the Greek *topos*, which means place. Hence, the word *MuRatopia* is now coined to describe our new social design.

This is our future economy. [78, Pages 169-171]

In this design of the MuRatopian economy as a re-unification process of workers and capitalists, etc, the concept of *possession* plays an important role. What is the *possession*, then, that distinguish from the ownership in a capitalist economy? It consists of the three principles as the following excerpt indicates.

A capitalist economy as a social institution presupposes a modern concept of private ownership. The essence of this concept is the exclusive right to dispose of a private property by its legal owner.

In other words, no other person can exercise such a right of disposal without the permission of the legal owner, even if the other person is actually in a state of possessing the property. Hence this concept allows the exclusive and absolute right of property disposal by its private owner *beyond time and space*. A capitalist economy would not function without this legal system of private ownership. For instance, an exchange of a commodity in a market presupposes its owner, because the exchange is nothing but a transfer of private ownership.

In comparison, possession refers to the exclusive right to dispose of a private property by those who are in a state of its actual management, and thus who are sharing it. In other words, possession is a private ownership which is *confined by time and space*. Private ownership only *here and now* - this is possession. In this sense if possession is imposed in private ownership, no legal owners of the property can exercise their right of disposal from outside or from past into future. For instance, no shareholders or capitalists can claim a dividend payment of the company they legally own unless they are indeed engaged in the actual production and management activities themselves. This is the essence of possession. And *possession* is the only institutional and legal requirement of property management which is imposed in the MuRatopian economy. To be more specific, for the case of production units this institutional requirement of possession consists of the following three principles:

Principle (1) Automatic possession of the production units at the time of participation.

When co-workers join MuRatopian organizations, they automatically become possessors of the production units and join self-management in a democratic manner. Moreover, no co-workers are dismissed against their will.

Principle (2) Automatic dispossession of the production units at the time of departure.

When co-workers leave MuRatopian organizations, they automatically dispossess the production units and lose control over self-management from outside. Dispossession also occurs at their death, and no one can inherit their possessions unless that person himself or herself joins the organizations.

Principle (3) Possession of the production units as a niche.

Everyone in the MuRatopian economy is entitled to freely create or seek the fittest niche or habitat in the form of possession, but no one is allowed to derive economic benefits from possession itself. In other words, sales of the production units are, under this principle, nothing but a change in the form of possession without payment, and thus the production units as physical stocks are continuously self-managed, accumulated or

destroyed by new possessors. Hence, co-workers can only derive economic benefits from production and exchange of net flows (= consumption and investment goods), but not from exchange of stocks or the production units themselves [78, Pages 171-173].

The system structures of the MuRatopian economy has now become understandable to the reader. It is the economy that strives to re-unify the separated entities under the capitalist market economy. As an example, Figure 15.2 illustrates the state of the re-unified workers and capitalists and employers as co-workers.

With these system structures how does the MuRatopian economy work? In early 1980's no computer simulation method was available to me. Using my mental simulation power, I have claimed in [78, Chapter 10] that the following 14 issues could be solvable as system behaviors.

Economic Issues Solvable

- (1) Unemployment
- (2) Exploitation and Unfair Income Distribution
- (3) Recession, Inflation and Stagflation
- (4) Financial Tycoons
- (5) Inhumane Incentives to Technological Innovation

Social Issues Solvable

- (6) Concentration and Congestion
- (7) Violence and Crime
- (8) Discrimination based on Hereditary Factors
such as Race, Color, Sex, Age, etc.
- (9) Discrimination based on Posterior Factors
such as Religion, Belief, Culture, Language, etc.
- (10) Alienation and Bureaucracy

Environmental Issues Solvable

- (11) Destruction of The Eco-System

International Issues Solvable

- (12) Poverty in The Developing Countries
- (13) International Conflicts based on National Interest and Different Ideologies
- (14) Nuclear Threats and Arms Race

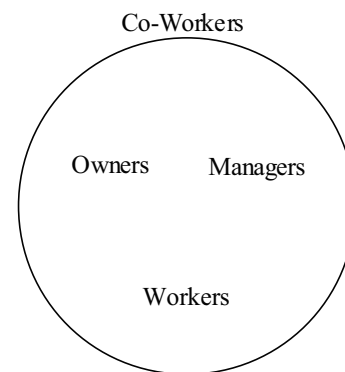


Figure 15.2: Re-unified Co-Workers

Why Didn't the MuRatopian Economy Emerge?

The MuRatopian economy was proposed in the book [78] published in 1988 with an expectation that its new social design would gradually emerge as an alternative to the effete capitalist economy and socialist economy that collapsed in 1991. Since then more than a quarter of century has passed, yet 14 economic, social, environmental and international issues that have been claimed to be solvable still remain, and seem to be getting worse.

What went wrong with our new social design, then? It seems to have overlooked the following two features that have prevented its emergence.

(1) Developing countries such as BRICS (Brazil, Russia, India, China and South Africa) have started to catch up with the developed countries since 1990s. Being challenged by them with severe competitions, capitalist economies are forced to re-organize themselves by proclaiming a new capitalist vision of globalization. Under such a fanatic trend, an alternative vision of localization that the MuRatopian economy of re-unification has tried to establish has been pulled back behind the world economic stage in due course. Only recently, the financial and debt crises began to reveal a systematic failure of globalization under the current debt money system, making the alternative way ready to be implemented eventually.

(2) The debt money system has been so dominant as to command capitalist and former socialist economies as well as developing countries, so that we have been so far indoctrinated as if it is the only universal monetary system. Accordingly, monetary and financial instabilities, unemployment, and inflation/deflation have been caused by another reasons than the debt money system per se. Conversely, our macroeconomic simulations have revealed that these monetary and economic instabilities have been mainly caused by the current debt money system. In other words, the MuRatopian economy cannot solve these problems under the current debt money system. When the MuRatopian economy was designed in early 1980s, it had entirely overlooked the root cause of our socio-economic and environmental disasters.

15.4 The Green Village(MuRatopia) Economy

We cannot live without a hope; a hope that is supported by a promised dream. In mainstream economics, our promised dream has been the creation of a perfect market economy in which equilibrium is self-restored and resources are efficiently allocated as a state of Pareto optimum. If our economy is in disequilibrium such as recessions and unemployment, it is because of the existence of some imperfect conditions that retard the market equilibrium. Hence the removal of these imperfections becomes the first priority of macroeconomic public policies such as deregulation. In chapter 2, the price adjustment mechanism is shown to be not self-restoring and occasionally become chaotic; a counter-example against the mainstream equilibrium theory. In addition, chapter 7 has shown that even under the perfect price flexibility, the full capacity and/or aggregate demand

equilibria failed to be attained.

This mainstream dream, though broken theoretically, has been further extended in the 1990s to include a promise of a perfect financial market under the so-called Efficient Market Hypothesis. Unfortunately, this promised dream was also completely broken by the recent financial crises in 2008 (which may be called the Second Great Depression). In this way the promised dream of the mainstream economics has become a completely broken promise on which we can no longer entrust our hope.

Under such circumstances, can an alternative hope be envisaged; an alternative hope that is robustly supported by a promised dream in which we can live a decent life that is sustainable and free from recessions and debt burdens. The economy that could support this dream has to be the one that meets criteria such as monetary and fiscal stability, full employment, debt-free government, equality in income distribution and sustainability.

The public money system discussed above is not enough in the sense that inequality still remains among shareholders and workers, leading to socio-economic instability. The MuRatopian economy is also not enough in the sense that it lacks public money system. Accordingly, the ideal system design of the future economy that provides such a promised dream must be, we believe, the integrated economy of these two; that is, the MuRatopian economic system of public money. Let us call it the “Green Village(MuRatopia) Economy”. The word *green* symbolizes the *sustainability* supported by the public money system. We decided to keep “MuRatopia” as a newly re-defined place of village which is built on the public money system.

Hence, we conclude that the green village(MuRatopia) economy is the best design we can shape in order to meet the societal criteria that must include monetary and financial stability, full employment, debt-free government, equality in income distribution, and sustainability. Let us now discuss in detail some features of the system structures of this new economy.

System Structures of the Economy

The system structures of the new economy consists of the these two features: a public money system and possession.

Public Money System

The green village(MuRatopia) economy runs under the public money system. The system is well presented so far, and no explanation is needed concerning its functions.

Possession for the Re-Unifications of Markets

The current capitalist market economy is built on the legal concept of ownership, which has resulted in the creation of labor market between workers and capitalists, financial capital market between savers and investors, and commodity market between producers and consumers. During the 1990s, these market

Green Village(MuRatopia) Economy: Structures	
Economy	<ul style="list-style-type: none"> • Public Money System (against Debt Money System) • Possession (against Ownership)
Re-Unifications of Markets	<ul style="list-style-type: none"> → Co-workers (Workers = Capitalists) → Self-investor (Savers = Investors) → Prosumers (Producers = Consumers) (⇒ Localization against Globalization)
Economic Policies	Public Money Financing Policy (against Keynesian Fiscal & Monetary Policies)
Green Village(MuRatopia) Economy: Behaviors	
Monetary & Financial Stability	<ul style="list-style-type: none"> Stable Money Supply Stable Price Level (No Inflation and Deflation) No Bank-run (against Deposits Insurance)
Employment	Co-Worker Employment (against Lay-offs)
Debt-free	<ul style="list-style-type: none"> Debt-free Government Less Private Debt
Equality	Income Equality (against Financiers' Interest Income, and Shareholders' Profits (Rent and Dividends))
Sustainability	Man and Nature re-unified

Table 15.3: The Green Village(MuRatopia) Economic System of Public Money

economies have been pushed to the extreme corner of globalization, or into the global market economy.

On the other hand, the green village(MuRatopia) economy is established on the concept of possession, as already introduced in the previous section, which is expected eventually to re-unify the separations generated under the market economies. First, workers are re-unified with capitalists and employers to become co-workers. Worker cooperatives and Employee Stock Ownership Plans (ESOPs) would be the examples of organizations operated and managed by co-workers. Second, savers are re-unified with investors to become self-investors so as to make their own investment out of their own savings. Third, producers are re-unified with consumers to produce custom-design products for consumers. They are called prosumers in [67]. Production of food and fresh vegetables that are locally produced and locally consumed could be a typical example.

In this way, the green village(MuRatopia) economy consisting of two features tends to create system structures in favor of *localization* or local markets vis-à-vis globalization or global markets under the current capitalist market economy.

Economic Policies

Economic policies of the green village(MuRatopia) economy will be the same as those under the public money system; that is, public money financing policy, and no further explanation of its functions may be needed.

System Behaviors of the Economy

Let us now investigate how the green village(MuRatopia) economy behaves or works in terms of monetary and financial stability, employment, government debt, equality in income distribution and sustainability.

Monetary and Financial Stability

The green village(Muratopia) economy runs under the public money system. Accordingly, monetary and financial stability will be attained in a similar fashion as discussed above under the macroeconomic systems of public money.

Employment

Workers are no longer forced to be laid off under the green village(MuRatopia) economy, because they now possess their own workplaces and become like family members of the organizations they belong to. Mondragon Cooperative in the Basque Country of northern Spain is one such example. Its workers kept their job security during the financial crises of 2008 and the following economic mess in Spain. This implies that employment of the green village(MuRatopia) economy is very resilient against economic instabilities.

Debt

Public money system of the green village(MuRatopia) economy enables the Public Money Administration to provide the interest-free money supply necessary for welfare and public policies at interest-free, so that government needs are no longer constrained by traditional tax and debt funding of its budget. Accordingly, government finance becomes completely debt-free, and fears of any public default is thoroughly eradicated.

Equality in Income Distribution

We have discerned two layers of inequality in income distribution caused by the present debt-based, rent-seeking institutional framework; that is, inequality between financiers and non-financiers, and inequality between capitalists and workers. The former inequality is eradicated by the introduction of the public money system, because money can no longer be created by the issuance of interest-bearing debt, so that financiers lose their main source of interest income. The latter inequality is removed by the introduction of the framework of possession, because dividends are no longer distributed among capitalists or shareholders, and instead are shared among co-workers.

The elimination of these two layers of inequality, however, does not imply that inequality among the co-workers are completely eliminated. On the contrary, there may still remain several levels of inequality in income distribution due to the different economic performances and productivities of co-workers. This type of inequality can not be completely removed, but can now be rationally justified as a result of economic activities, providing better incentives for hard work through economic efficiencies among co-workers.

Sustainability

Forced payments of interest accruing from heavy burdens of debt are thoroughly eliminated under the green village(MuRatopia) economy. This elimination, in turn, removes the driving forces of unnecessary economic growth to meet the payment of interest. Removal of forced economic growth, in turn, prevent the destruction of environment.

Moreover, co-workers of the green village(MuRatopia) economy become more conscious of their own workplaces as their own living spaces, which eventually energize their local economic activities and communities. Consequently, co-workers also become more conscious of the need of their future generations. This inclination goes wholly well with the following definition of sustainability which has been repeatedly quoted ²:

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. [52, p.43].

Regrettably, many discussions on sustainability have been carried out in the literature without considering a role of both public money and its alternative economic system. In this sense, these arguments on sustainability are incomplete and short-sighted. Under such circumstances, it is posed that sustainability can be thoroughly attained under the green village(MuRatopia) economy.

Indicators for the Green Village(MuRatopia) Economy

GDP has been, as being used in this book, the most dominant indicator of macroeconomic behaviors. However, it has been heavily criticized recently, because it fails to measure human activities outside of markets such as household labors, and environmental destructions. To supplement or replace it, new economic indicators such as GNH (Gross National Happiness) and HDI (Human Development Index) have been suggested. Yet, those indicators are only applicable to measure system behaviors.

According to the discipline of system dynamics, system behaviors are already specified when system structure is designed. Consequently, the improvement of system behaviors can only be fulfilled with its structural changes. Otherwise, any effort to enhance system behaviors will turn out to be ineffective and unsuccessful in meeting its goals. In this sense, it becomes more essential to measure how system structures are being changed in order to affect system behaviors. With these ideas in mind, we would like to recommend the following two indicators to measure the structural changes from the current capitalist economic system of debt money to the green village(MuRatopia) economy.

The first indicator is to measure how much of the current central bank is

²More detailed definition of sustainability is provided by the author on a basis of physical, social and ecological reproducibility; Chapter 3: Modeling long-term sustainability in [54, pp. 29 - 59].

owned by the government and how high is the reserve ratio.

$$\text{Public Money Index} = \frac{\text{Public Ownership (\%)} + \text{Reserve Ratio (\%)}}{200 (\%)} \quad (15.3)$$

For instance, in the case of the Public Money Administration, its public money index becomes $(100\% + 100\%)/200\% = 1$. Compared with this, the Bank of England is 100% government-owned, yet its reserve ratio is said to be zero, then its public money index becomes $(100\% + 0\%)/200\% = 0.5$. In the case of the Bank of Japan which is 55% owned by the government and its reserve ratio is around 1%, its public money index becomes $(55\% + 1\%)/200\% = 0.28$. On the other hand, the Federal Reserve System (the American central bank) is said to be 100% privately owned, and its reserve ratio is around 10%. Then its public money index becomes $(0\% + 10\%)/200\% = 0.05$.

The second indicator is to measure how co-workers are emerging.

$$\text{Co-worker Index} = \frac{\text{Co-Workers}}{\text{Total Labor Force}} \quad (15.4)$$

The increasing index of co-worker index implies that more workers are securing jobs at their workplaces, and living a better life, by reducing inequality. This index could be used as a representative of re-unification. Of course, the other indexes of re-unification could be introduced such as those of self-investment and prosumer. Further investigation of these indexes are left to the reader.

Imagine how fruitful our economy would be whenever people begin to compare these indexes instead of GDP as the appropriate measure of their economic performances. Imagine how joyful our life would be when it is being led by the hope that is supported by a promised dream of the green village(MuRatopia) economy.

Conclusion

This chapter first compared the system structures and behaviors between the public money system and debt money system, and argued that more than 99% would support the public money system in the face of the present systemic failure of the current debt money system. Yet, the public money system is not ideal, primarily due to the remaining inequality in income distribution among capitalists and workers in a capitalist economic system.

Then, our search for a better socio-economic system design continued by revisiting the MuRatopian economy that was presented in early 1980s as an alternative to the effete capitalist and socialist economies in light of the trend toward a coming information society. The economy, however, failed to emerge because of the neglect of the two features; emergence of the developing countries such as BRICS which have challenged the developed capitalist economies, and the role of public money.

Finally, these MuRatopian and public money economic systems are integrated to produce the best system design in terms of monetary and fiscal stability, full employment, debt-free government finance, equality in income distribution and sustainability the economy and environment. The economy is called the “Green Village(Muratopia) economy”, and its system structures and behaviors are explored. Then two indicators for the economy are introduced, such as the public money index and co-worker index, to measure our promised dream toward the Green Village(MuRatopia) economy.