

Introduction of Minus Interest Rate

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[Introduction of Minus Interest Rate]

Interest rate on loans must correspond to nominal economic growth rate.

Preface

Japanese economy still doesn't show signs of full-scale economic recovery, as [Recession] has been said for a long time. When in the world will Japanese economy recover?

Why did economy be weakened in the first place?

[Economy has been weakened because of the bubble burst.].

It is frequently-heard expression. Why does economy be weakened by bubble burst?

Disposal of bad debt is hardly completed. As somehow new bad debts occur continuously, although banks dispose of bad debts so hard. Why do bad debts continue to increase?

These situations can't be explained by classical economic theory. Because there is no theory suitable for Japanese economic situation. The reason is simple. There are deficits in conventional economic theory because consideration is insufficient. As a result, all economic phenomena can't be explained correctly.

Prime example is interest rate. Clear definition of interest rate doesn't exist.

[Interest rate is plus] is basic premise of economic theory, but why must interest rate be plus? How on earth should interest rate be decided? Such important points have not been considered sufficiently.

Interest rate is defined clearly with consideration of essential meaning of money in this book. As a result, it is understood that interest rate can be both plus and minus. And it is easily understood that the policy to recover present Japanese economy is only [Introduction of minus interest rate].

Please understand essence of problems happening in present Japanese economy to understand essence of interest rate through this book, and acknowledge there is no policy other than [Introduction of minus interest rate]. And there is an increased chance to realize [minus interest rate] as real policy. Japanese economy will recover if it is realized.

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The meaning of currency

In order to review financial / economic theory, we have to consider money. What is money?

Money is called [currency] in this book. Both coin and paper money are called [currency].

Important role of currency is exchange function of value. It is paid when objects and services are bought. Paid currency becomes currency of receiver. Thus currency is paid just as much as the value of objects / services from buyer to supplier. Therefore currency has function to indicate both magnitude and direction of exchanged value. Direction is indicated by possession of currency, and magnitude is indicated by amount.

Then, what does currency become after the exchange? Value of currency is fixed for the first time when it is exchanged with objects / services. Value of currency is not fixed before economic transaction. Therefore, value of money after exchange will not be fixed till next economic transaction

In short,

[Currency that is not used in transaction can't have amount.]

When economic transaction is done, currency has just as much value as value of transaction.

For these reasons, it is necessary to generate following rule in order to satisfy both exchange function and save function of value.

[Value of currency occurs only at the moment of making a deal]

Value of currency doesn't occur without transaction.

In traditional economic theory, currency has as much value as amount of the currency. Owner of currency has value corresponding to the amount. But, if social unrest etc. happen after receive of currency and economic transactions don't go through at all, how about the value of currency. As there is nothing that can be exchanged with currency, currency has no value.

If society stabilizes and something can be bought with money, currency can have the same value as bought objects at the moment of realizing the buy.

For these reasons, it is understood that traditional economic theory that protests [Currency itself has value] is imperfect. Value of currency does not continue. Currency has the same value as exchanged objects at the moment of going through economic

transaction. When economic transaction is finished, value of currency is extinguished. When this currency is used in next economic transaction, the currency repossess value. This is essential meaning of currency. Therefore, possession of currency functions as record of

[economic transaction was done previously, and value corresponding to amount of money was supplied.]

There may be someone who reacts against the explanation described above by stating

[For what purpose do we work? It is unrealistic that salary clears at the moment of receiving it.]

The explanations described above are only essential meanings of currency. Salary consistently remains. Value is just not realized. Value is realized at the moment of buying something with the salary. It is not until the salary is exchanged with something that value of salary is realized. Is it OK with you?

What is Interest rate?

It is explained that currency has value with economic transaction. Next, how to describe change of value of the currency is needed.

If currency used in economic transaction as ¥100 is used as ¥110 in next transaction, value of the currency is increased 10%. Change ratio of value of the currency is called [interest rate].

For example, when salary in exchange for labor is received via direct deposit, it is banked as deposit. Interest is paid because of deposit rate. So, we use salary as amount of money bigger than salary itself in economic transaction.

When full amount of salary is used in this way, value of salary is increased by interest. In this example, interest rate is defined as [Change ratio of salary.]. However, the interest rate is decided when full amount of salary is used in economic transaction. Before then, interest rate can't be decided because economic value doesn't necessarily occur.

Interest rate can be decided after economic transaction. Therefore, interest rate can only be decided after the fact. So, present deposit system in which interest rate is decided before the fact is not right system.

Decision method of interest rate

Interest rate is defined as [Change ratio of value of currency]. Then, what should the change ratio be decided by?

Interest rate is limited to plus in traditional financial / economic theory. (In this book, plus interest rate includes 0%.) Plus interest rate means that value of currency increases constantly.

[Currency has store function of value.]

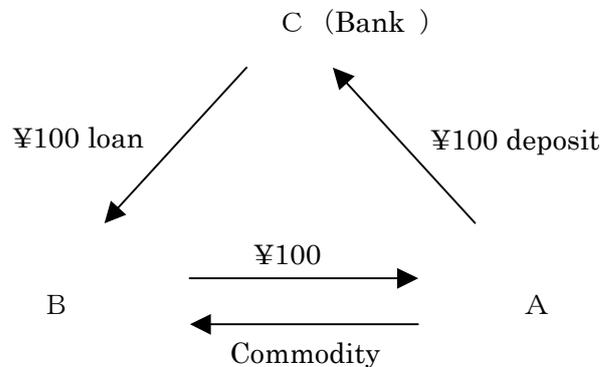
[We should repay full amount of money we borrowed. We should also pay interest.]

These common sense ways of thinking might be reasons for interest rate to be limited to plus. But, are these ways of thinking really true? Let's look into how to determine interest rate by explaining simple sample of economic transaction.

Currency doesn't exist before economic transaction. Currency occurs with economic transaction. Currency is credit. It is right to buy something. Debts and credits always occur equivalently at the same time. Rights (credits) and obligations (debts) always occur in pairs.

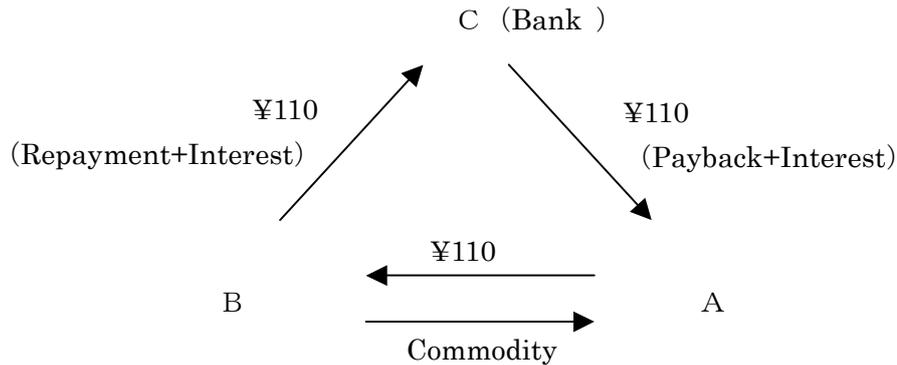
Suppose there are three people who make deals. These three people are named A, B, C.. A makes a deal with B, and C plays a role of bank.

A produces commodity and sells it to B. Price of it is ¥100. C issues ¥100 and lends it to B. B buys the commodity from A with the money. A gets ¥100 and deposits it to bank C. B is in debt to the amount of ¥100. Suppose these flows of currency arise at the same time, because value of money occurs at the moment of economic transaction.



After that B produces commodity and sells it to A. Price of it is ¥110.

Suppose both interests on deposit and loan from previous transaction of ¥100 to transaction of ¥110 is ¥10. A withdraws both ¥100 of deposit and ¥10 of interest from C. B repays ¥100 in debt and ¥10 of interest to C. If Transaction of ¥110, withdrawals of A and repayments of B are done at the same time, the transaction of ¥110 is realized.



In these two transactions, values of economic transactions are increased from ¥100 to ¥110. This means expansion of scale of economic transaction. Change ratio of values produced in economic transactions is called economic growth rate. Suppose period of two transactions is one year, economic growth rate is $(110-100) / 100=0.1$ (10% per year).

Interest on a loan of the same period is ¥10, so it can be converted to 10% in interest rate.

As described above, if interest rate corresponds to economic growth completely, debts and repayments are compatible completely. Therefore

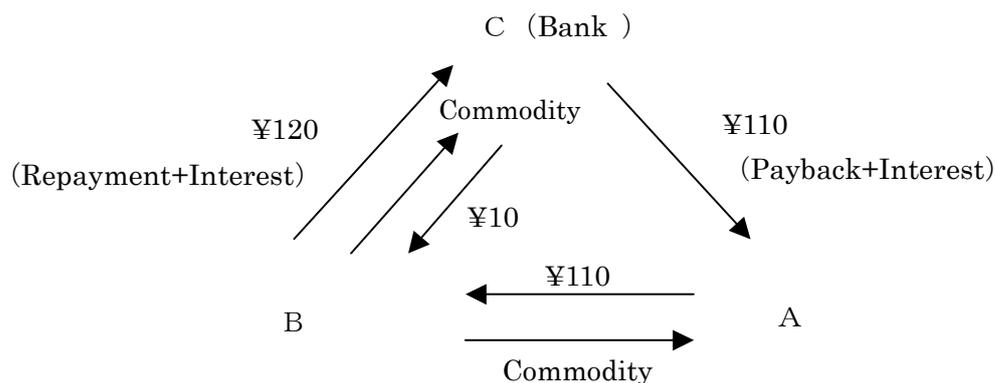
[Interest rate must correspond to economic growth rate completely.]

Otherwise, economic transactions can't be realized.

Interest rate of deposit is usually different from that of loan in banks. Banks get profit for interest rate of loan to be higher than that of deposit.

Suppose previous transaction of ¥110 is changed to transaction of ¥120. Suppose interest of deposit is ¥10 and interest of loan is ¥20. Then, the transaction can't be realized because of lack of funds of A. A has only ¥110.

Suppose A buys commodities of ¥110 and C buys commodities of ¥10. Then transactions can be realized completely.



In this case, economic growth rate is 20%. Because interest rate on loan is also 20%, interest rate on loan corresponds to economic growth rate perfectly. On the other hand, because interest rate of deposit is 10%, it is different from economic growth rate. As described above, the conclusion is

[Interest rate on loans must correspond to economic growth rate completely.]

This is very simple example of transaction, but it is necessary to eliminate money out of relation to the transaction in order to understand essence of economy. Then it becomes very easy to understand essence of economy.

As many economic entities transact in real economic activities, it is difficult to grasp whole image of transactions. As there are two kinds of products, [Intermediate product] [Final product], it is complicate to understand the whole image.

[Intermediate product] is a part of car and [Final product] is car in car production. As parts are intermediate products to product car, it is called as [Intermediate product].

As price of [Final product] includes price of [Intermediate product], whole amount of transactions can be summed up by summing up whole amount of transactions of only [Final product]. Therefore, only [Final product] is target to sum up in order to simplify the whole image. (If [Intermediate product] is summed up, amount of additional value is summed up excessively.).

Amount of daily occurring transactions means amount of currency occurring daily. As it is amount of daily transactions, it escalates naturally. Then, change ratio of amount of transactions is daily interest rate. Thinking in the same way, change ratio of amount of transactions for a year can almost substitute for average interest rate for a year. (Error is observed by when and how much deals are made.).

Amount of value of final product that is produced within the specific period is called

gross domestic product (GDP). GDP is released periodically as economic index. Change ratio of GDP is called economic growth rate. (The word “economic growth rate” was used in example of transaction, but general meaning is change ratio of GDP).

As discussed above,

[Economic growth rate as economic index should correspond to interest rate on loans naturally.]

can easily be understood.

There are two kinds of economic growth rate, nominal economic growth rate that means amount itself and real economic growth rate that takes change ratio of price into consideration. Economic growth rate in this book is **nominal economic growth rate** that doesn't take price fluctuation into consideration.

(Because GDP doesn't include all economic transactions, it doesn't correspond to economic growth rate in this book perfectly. Economic index that is close in meaning with economic growth rate in this book is nominal economic growth rate.)

The reason why essence of interest rate can't be defined in classical economic theory is that money without economic transaction has economic value in classical economic theory. Too much money is distributed in present economic system in which cash is used mainly. As economic value is given to all the money and interest rate is applied to the money, the essence of interest rate can't be understood easily. Value of currency occurs at the moment of economic transaction, and another money is not needed essentially. If cash basis is abolished and IT technology is used in currency, as currency without transaction is not needed, economic transaction may be able to be operated theoretically compatibly. As a result, management of the economy can be done without extreme difficulty of today.

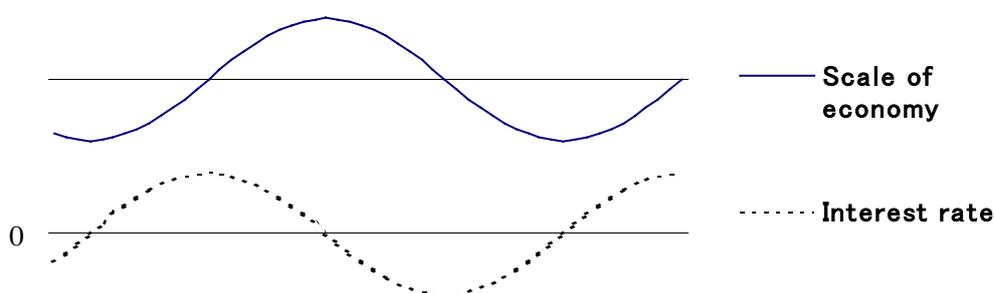
That interest rate corresponds to economic growth rate means if economic scale is changed in a curved line described on the figure, interest rate is changed in a curved line described below.

If economic growth is plus, interest rate is plus. But if economic growth is minus, interest rate is minus naturally.

It is defined that scale of economy at time of t is $X(t)$, interest rate is $r(t)$.

$$r(t) = 100 \times \frac{1}{X} \frac{dX}{dt} \quad (\%)$$

Interest rate $r(t)$ is defined in calculating formula described above. dX/dt means change amount of scale of economy. By dividing it by scale of economy X , change ratio of scale of economy can be calculated. And it is converted to percent by multiplying it by 100.



Relation between scale of economy and interest rate.

As discussed above, it is understood there is fatal default in classical economic / financial theory. The condition of plus interest rate has no theoretical root. Minus interest rate exists naturally. Reduction of scale of economy means the decrease of amount of money. The decrease can be realized by applying minus interest rate.

It is concluded in classical economic theory that interest rate should be raised in booming economy and interest rate should be lowered in depression.

The conclusion is derived from discussion other than explanation of this book, but the way of thinking in this book may be simpler and easier to understand. In short, basis interest rate is economic growth rate itself. If interest rate is higher than it, debtors are burdened excessively. In reverse case, debtees (depositors) are burdened excessively. Do you understand?

It may be easily understandable to regard introduction of minus interest rate as introduction of market principle. Amount of asset of equity is evaluated by market value, not by purchase price. If market price rises, the asset increases. If market price lowers, the asset decreases. Purchase price has no relation.

Amount of currency is decided by scale of market economy itself. Currency occurs

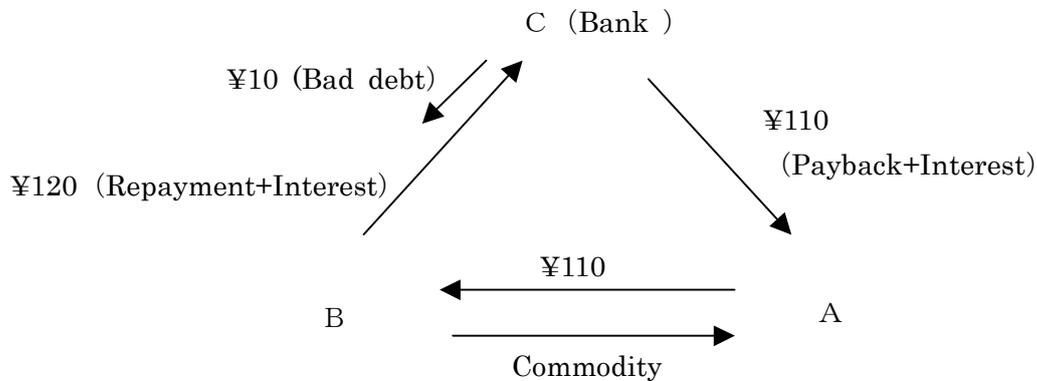
with economic transaction. If scale expands, currency increases. If scale diminishes, currency decreases. Without economic transaction, there is no value of currency.

As discussed above, amount of currency should be decreased when scale of economy diminishes. It is interest rate that changes the amount of currency. Therefore, amount of currency should be decreased by applying minus interest rate, when scale of economy diminishes.

Difference between interest rate and economic growth rate

As described earlier in sample transaction, it may be understood that interest rate and economic growth rate agree. If these are different, what will happen?

Suppose interest rate on a loan is changed to 20 % and transaction price is changed to ¥110 (Interest rate of deposit is 10%) in earlier second transaction. Economic growth rate is 10% in this case. Then B has to repay ¥120 in debt with sales of ¥110. But the amount of difference of ¥10 can't be paid. This ¥10 is credit obligation of bank C. The credit obligation can't be collected, so it is called bad debt.



As described above, if interest rate on loans of banks is over economic growth rate, bad debt is sure to occur in proportion to the difference of rates.

As economic growth rate is number count of the whole country, accurate meaning is [Bad debt occurs on an average of the whole country.]

As there is no money to repay, it can't be repaid.

Company of sound financial strength may be tolerant as a matter of course, but company of needy financial situation may have bad debt – be in bankruptcy.

Therefore, it is necessary to keep consistency between interest rate and economic growth rate in order to prevent occurrence of bad debt.

As discussed above, mechanism of occurrence of bad debt may be grasped. Nominal economic growth rate has been turned to minus, but loan rates in banks have been plus since the year 1998. As there is no money to repay the difference, it becomes obvious as bad debt.

Therefore, no matter how hard banks clear away bad debts, bad debts increase under the condition of minus economic growth rate. It is theoretically inevitable conclusion.

In addition, the reason for companies to have poor intention to borrow money although the Bank of Japan realizes zero interest policy can easily be understood. To borrow money has high possibility to lose under the condition of minus economic growth rate and plus loan rate. Possibility to lose is higher than possibility to gain on an average.

Therefore, it is necessary to introduce interest rate [minus interest rate] that fits economic situation for companies to enhance the willingness to invest, and to stimulate the economy.

There may be opinion that interest rate should be plus and original principal should be guaranteed from the viewpoint of depositor protection, but it is impossible naturally. Currency exists with economy. If economy diminishes, currency decreases inevitably. If currency doesn't decrease, depositors have currency that doesn't exist essentially. If this type of currency increases, credit across whole economy is lost. Therefore, it is necessary to introduce minus interest rate when economy diminishes.

In addition, as interest rate over economic growth rate is excessive repayment burden, companies may be in bankruptcy. Then economic value over interest burden is lost. As a whole nation, demerit of company's bankruptcy is far more than merit of depositor's interest received. In short, interest rate over economic growth rate destroys the economy.

Therefore interest rate should usually be controlled to burden both debtees and debtors equally. The interest rate is economic growth rate. Is it OK with you?

The influence of government activity to interest rate

Economic entities are not only individuals and companies. Government is also important economic entity. Government gets activity funds by tax and issue of bond,

and offers various kinds of services and public goods. Therefore, government activities influence GDP (Gross domestic product). It means government activities influence interest rate. Therefore, influence of government should be considered in order to define interest rate correctly.

But if government and companies are separated, it becomes complicated to think of interest rate. Therefore, government is estimated as a part of companies. It is easy way to grasp the essence of interest rate. Each company pay costs of taxes and spread government activities as a business of their own. Then, there is no difference between activities of companies and activities of nation. Therefore, the conclusion

[Interest rate on loans must correspond to economic growth rate completely.]

is applicable without change.

As discussed above, it is concluded that economic growth rate should be applied to interest rates of national bond and local bond.

Calculation of basic interest rate

[Interest rate on loans must correspond to economic growth rate completely.] was explained. But economic growth rate in this book doesn't correspond to change rate of GDP (Gross domestic product) completely. Whole economic transaction needs to be included. Change rate of the whole economic transaction is called basic interest rate in this book.

Profit by change of equity price, and profit by buying and selling of used commodities etc. are not included in GDP, so basic interest rate needs to be calculated by adding these figures.

But equity price is connected with GDP. And market of used commodities is not so big. Therefore, difference between (nominal) economic growth rate and basic interest rate is very small. But when equity price is changed largely, the difference may be not so small.

When minus interest rate will be introduced, formula for computation of basic interest rate must be defined clearly in order to manage economy accurately. It is a part of subject of future investigation.

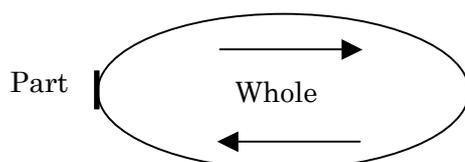
Currency is fractal structure

Consideration of structure of currency will be gone ahead with. Minimum unit of currency is ¥1. (In case of yen). Economic transaction is done by gathering a lot of it together..

There is no distinction of currency. Currency used in transaction among companies and currency used in convenience store are the same currency. Therefore, all these currencies are linked together. Currency exists as a sequence of circulation. All economic activities are connected through the currency.

It means if there is ¥100 coin in front of me, all currencies (yen) are included in the coin. Is it OK?

If amount of currency is whole, each currency is a part of it. But, each currency is connected to the whole. No currency exists independently. It means the whole of currency is always included in each currency as a part of the whole, considering the connection.



As just described, the structure in that whole is included in every part is called **fractal**. Therefore, currency is fractal structure.

Deflation occurrence rule

Suppose 10% of the whole economic transaction became bad debts. Bad debts are credits that can't be collected. Then, 10% of the whole currency is the currency that is not distributed.

In this case, suppose there is a ¥100 coin, ¥10 in the coin can be thought to be bad debts.

It was explained previously that currency is fractal structure. That means whole currency is included in a ¥100 coin. That 10% of the whole currency became bad debt means 10% of ¥100, in short, ¥10 became bad debt.

Therefore, only value of ¥90 exists in this ¥100 coin. It looks as if ¥100 exists, to tell the truth, it is true to understand that only value of ¥90 exists.

It realizes as time passes. Bad debt is currency that can't flow, currency without

economic transaction. Currency occurs with economic transaction in nature. Currency of amount of bad debt can't flow means that scale of economic transaction diminishes.

If bad debt of 10% exists, economic transaction decreases at the same rate. As a result, amount of currency decreases 10%.

In this way, bad debt diminishes scale of economy. The diminish of scale of economy means occurrence of deflation. As described, bad debt causes deflation.

As this kind of thinking doesn't exist in classical economic theory., it is named

[Deflation occurrence rule] by bad debt.

As bad debt causes deflation, it is necessary to dispose of bad debt as soon as possible.

Occurrence status of bad debts by difference between interest rate on loans and economic growth rate

<Comparison between growth rate of (nominal) GDP and interest rate on loans>

Year	GDP (¥1 billion)	Growth rate (%)	Loan balance of banks (¥1 billion)	Interest rate on loans (%)	Difference (%)	Amount of loss (¥1 billion)
1984	305,144	6.85	210,479	6.54	-0.30	-639
1985	324,290	6.27	237,170	6.27	-0.01	-20
1986	339,363	4.65	300,165	5.29	0.64	1,914
1987	355,522	4.76	337,784	4.92	0.16	536
1988	379,657	6.79	372,175	4.96	-1.83	-6,798
1989	406,477	7.06	412,407	6.43	-0.63	-2,612
1990	451,473	11.07	443,304	7.68	-3.39	-15,009
1991	474,993	5.21	462,644	6.50	1.29	5,979
1992	483,607	1.81	473,913	5.20	3.39	16,054
1993	487,891	0.89	479,977	4.18	3.29	15,807
1994	491,640	0.77	480,267	4.00	3.23	15,506
1995	504,038	2.52	486,356	2.71	0.19	911
1996	516,729	2.52	488,290	2.50	-0.02	-92
1997	521,153	0.86	493,023	2.37	1.52	7,483
1998	514,418	-1.29	488,820	2.22	3.52	17,184
1999	510,687	-0.73	468,810	2.05	2.78	13,020
2000	515,478	0.94	463,916	2.05	1.11	5,145
2001	502,602	-2.50	448,223	1.88	4.37	19,609
Amount of loss(1984~1990)						-22,628
Amount of loss(1991~2001)						116,604

* Difference is calculated by (Interest rate on loans—Growth rate)

* Amount of loss is calculated by multiplying Loan balance of banks by Difference

* These numbers are referred to economic directory 2003 edition (Edited by Economic and Social Research Institute)

Difference between interest rate on loans and nominal economic growth rate is written in tabular form. In addition, how much debtor's loss has occurred is calculated by multiplying loan balance by the difference.

What is surprising, loss of 110 trillion yen has been occurred for 11 years from 1991

to 2001. Loss of 10 trillion yen, about 2% of GDP has occurred per year averagely.

Essence of present bad debt problem may be understood in this table. Interest rate on loans over economic growth rate is essential factor of new occurrence of bad debt. Interest can't be paid because economic value doesn't increase over economic growth rate. It is not applied to a specific company with excess liabilities. Interest can't be paid by average company in Japan.

Another asset must be sold in order to repay excess interest. Companies in Japan have been doing it since 1991. Asset has been lost by selling it for over 10 years. Therefore it is impossible to repay, and companies fail.

[Interest rate must be plus]. This way of thinking has no theoretical root. As a result of interest rate management on condition of this premise, huge loss has occurred in companies in Japan. And responsibility of the loss is shifted to major banks, financial center.

If the status that interest rate on loans is over economic growth rate is continued as what it is today, bad debt occurrence continues. Bad debt depresses business by deflation occurrence rule. Present plus interest rate policy makes economy of Japan destroyed.

Nominal economic growth rate in the January-March quarter in 2003 was minus. In government economic prediction, nominal economic growth rate is -0.2% in 2003.

If economic growth rate is minus and interest rate on loans is plus, bad debt occurs inevitably. But government can't understand it. If interest rate on loans of banks is 1.8% , bad debt of 8~9 trillion yen will occur for a year. (All bad debts will not always surface. Loss will occur potentially.)

In short, government permits the occurrence of bad debt. Nevertheless, in case of actual occurrence of bad debt, government shifts the responsibility to management of banks. Don't you think it terrible? The mistake of lender policy is shifted to private company.

After understanding what is written above, government should begin to create laws in order to introduce minus interest rate as soon as possible. Otherwise Japanese economy can't be recovered eternally.

Mechanism of Japanese recession

As discussed above in this book, the reason of Japanese recession can be analyzed theoretically.

It started with bubble economy in last half of 1980s. Equity price and land price rose to a large extent and economic transaction expanded.

The problem is disposal after bubble economy collapse. As equity price and land price lowered to a large extent, economic value was lost drastically. Considering only this point, interest rate should have been minus and currency should have been decreased as much as lost economic value. But as plus interest rate was continued, large amount of bad debt occurred. Individual / company that couldn't repay their debts because of loss appeared one after another.

Amount of holding loss of equity and land was over 600 trillion yen in 1992. (Compared to 1989.). As a result, a large amount of bad debts occurred. Scale of economy diminished by deflation occurrence rule, as bad debts occurred. Economic growth rate in 1992 diminished over 3% as compared to previous year, because the bad debts occurred.

Financial policy about 10 trillion yen per year as economic measures was repeated between 1992 and 1997, but economic growth rate was low, between 0.7 to 2.5%. Therefore, economic growth rate from around 1992 might be minus or zero without economic measures. Deflation pressure by bubble collapse was so strong.

The reason why economic measures were done but economy was not recovered was that lender policy was mistaken. Since 1991 interest rate on loans of bank was over economic growth rate. Bad debts occurred continuously as much as the difference between these rates.

If interest rate was lowered drastically with financial policy and the status that interest rate on loans was under economic growth rate was continued, bad debts didn't increase and economy might be recovered.

But in classical economic system [Interest rate must be plus], interest rate on loans couldn't be under economic growth rate. Economic growth rate was too low.

In short, because of control mistake of interest rate, increase of bad debts couldn't be stopped.

Financial policy has an effect on expansion of economy. But, when reimbursement cost of national bond as source of money is paid by tax increase, economy diminishes reversely. Therefore, these financial policies can't be root expansionary policy, if it is not used as promising investment fund. In short, lender policy is more important than financial policy in order to stabilize economy. Because lender policy was mistaken,

Japanese economy became extremely worse.

Debtor's loss by the difference of rates was 110 trillion yen for 11 years from 1991 to 2001. As loss of about 10 trillion yen as annual average occurred, recession happened. Companies that can't bear an excessive burden were in bankruptcy continuously, and bad debt disposal burden was concentrated on banks.

This is also the cause of jobless problem. Because companies paid excess burden of interest by decrease of labor cost, jobless worker increased. The reason why official staff decreased and contracted worker or temporary hire increased was also decrease of labor cost. If labor cost of an official staff is 5 million yen per year, 10 trillion yen corresponds to labor cost of 2 million staffs. Therefore, if companies don't burdened excess interest, about 2 hundred official staffs can be increased. (It may be impossible for decrease of interest burden to be labor cost, but about 1 hundred official staffs can be increased.). Though rate of perfect jobless worker continues to be over 5%, rate of perfect jobless worker goes back to level before bubble economy by decrease of 2 hundred jobless workers. After all, excess burden of interest increased jobless workers and forced the economy into a slowdown.

Economic growth rate has been minus since 1998. It meant that interest rate on loans needed to be minus, but plus interest rate continued. As difference between rates expanded, bad debts over 10 trillion yen occurred per year averagely since 1998.

Bad debts occurrence diminishes economy. It forces the economy into slowdown. Therefore, interest rate on loans of banks should be lowered as soon as possible and new occurrence of bad debts should be prevented. Otherwise, stable economy can't be recovered. Minus interest rate is needed for this purpose.

The words "Winning group" "Losing group" have been used for companies since 1990's, it was caused by mistake of interest rate management. To the amount of difference between interest rate on loans of banks and economic growth rate, excessive debt companies were burdened too much, on the other hand, excessive credit companies could get too much funds. And these merit / demerit expanded as time passed. As explained above, companies of financial strength became stronger and companies of financial weakness became weaker. If minus interest rate had been introduced to interest rate on loans of banks, these words might not be used.

In addition, it might be the cause of recession that bad debt came to the front late. Bad debt's problem came to the front after bankruptcy of Hokkaido Takushoku Bank

and Yamaichi Securities Company in 1997. Until then, as bad debt had been underestimated, existence had been paid little attention.

If grand scale occurrence of bad debt had come to the surface much earlier, bad debt should have been disposed of much earlier. Bad debt continued to increase as time passed because of interest rate factor and so on. Therefore, if it had been disposed of much earlier, the cost burden should have been relieved. Then economy should not get so worse.

It must be said that banks and Finance Ministry are responsible for hiding of bad debt.

Necessity for minus interest rate

Amount of currency is far more than scale of economy, because interest rate on loans has been over economic growth rate since 1991. As a result, amount of national bond / local bond and increase of bad debt etc. have been happened. Economy has not been stable because Japanese people have burdened excess debt as compared to scale of economy.

Real work to decrease the excess currency is disposal of bad debt. The increased money has been decreased by abandoning credits by banks as private company. As the increased currency doesn't exist essentially, debtee must abandon it in some way. Therefore, nation should decrease the increased currency essentially. Introduction of minus interest is root policy to realize it.

Economic value we will accept is the amount of economic value which will occur in the future. For example, Economic value we will accept in the coming decade will be only economic value which will occur in the coming decade. It is meaningless for (value of) further currency to exist. It means that amount of currency must be decreased if scale of economy diminishes.

If currency is not used, value of it is lost. Reversely, the more currency is used, the more value of it increases. It is necessary for nation to know it thoroughly by realizing it as system.

Nominal economic growth ratio has been minus for several years. And equity price has been down. It means that amount of money should decrease naturally. Nation will be informed of it by introduction of minus interest rate.

[Money decreases without use of it.]

If it is understood, consumer confidence may be mustered. If consumption increases, it is not so difficult to recover from the situation called recession.

Consumption tax is discussed to reconstruct finance, but you may understand that it is extremely nonsense policy. Increase in consumption tax leads to decrease of consumer confidence and slumber of economic activity. To muster consumer confidence must be root of economic measures.

Currency used in consumption produces economic value. It becomes profit of company directly and it contributes to finance as corporation tax and tax on income of those who works in the corporation.

The problem is accumulated currency. It produces no economic value. Therefore, it is more important to tax the accumulated money than to increase consumption tax.

And what is as effective as the tax is introduction of minus interest rate. Decreasing surplus currency by application of minus interest rate to whole currency, whole economy is revitalized.

Minus interest rate is applied to issue of national bond. As assets decrease by buying national bond, financial institution and individual will not buy it. Therefore, Bank of Japan needs to buy all amount of it. Law arrangement for this purpose will be necessary.

If minus interest rate is introduced to national bond, huge problem of current Japanese economy - [increase of national bond] will be settled tentatively. Balance will decrease because of minus interest rate.

As economic growth rate has been minus since 1998, national bond should have been issued at minus interest rate naturally. But as plus interest rate has been continued, balance of national bond has increased as much as the gap. It means that national bond needs to be issued at interest rate lower than economic growth rate for the next few years. Otherwise, increased national bond can't be decreased.

Credit ranking / rating of national bond are lowered because balance became too much compared to scale of economy. Real value of economy is added value produced in real economy. As excessive national bond compared to the scale has been issued, possibility of the asset is questioned. It is shown as downgrade of rating of the bond.

Effect of introduction of minus interest rate

If minus interest rate is introduced, it leads to yen selling pressure, so yen is lowered. Sales increase in export industry because sales price is lowered when yen is lowered.

In addition, lower yen means Japanese wage level is lowered. The reason of

[hollowing out of industry] is that Japanese wage level is higher than that of Asian nations. As gap is diminished by lower yen, it is effective in decreasing hollowing. This leads to increase of number of payrolls, or unemployment policy. If unemployment man decreases, consumption increases, so the economy recovers.

Companies are forced excessive burden of interest rate as much as difference between interest rate on loans and economic growth rate. If this burden is lost through minus interest rate, it is not necessary to decrease labor cost excessively. As a result, employment increases and number of unemployment man decreases. As described above, minus interest rate becomes direct unemployment policy. As a result, consumption increases by income increase, and economy recovers.

If minus interest rate is introduced, function of banks recovers. Minus interest rate means decrease of balance of loans (amount of assets). Therefore, amount of bad debts decreases. As described above, minus interest rate produces an effect straight as countermeasure against bad debts. If bad debts decrease, diminish of economy caused by [Deflation occurrence rule] can be stopped.

In addition, as new occurrence of bad debts caused by difference between interest rate on loans and economic growth rate is stopped, cost of bad debts disposal is lost. Own capital can be increased to that extent. If own capital increases, collection of loan fund called “credit withdrawal” is not needed. Loan fund is collected because of capital adequacy rule. If own capital increases, amount of loan fund can be increased, so “credit withdrawal” is not needed.

If minus interest rate is introduced, interest can be accepted by loans, so demand of fund increases. It leads to various investments and Japanese economy returns to growth.

Interest rate on loans has been higher than economic growth rate for more than 10 years. Therefore, it will be necessary for interest rate on loans to be lower than economic growth rate for more than 10 years in order to improve balance sheet of companies. Thinking simply, debtor’s loss for past 10 years can be recovered by this method. Then, bad debts disappear and funds of Japanese economy flow smoothly, and economy recovers stable growth assessment.

If bad debts decrease and financial strength of companies is recovered, price of equity rises. As rise of equity price means increase of assets of nations, consumption is increased. Performance of company recovers by increase of consumption. Japanese economy recovers by this circle.

For these reasons, it might be understood how effective introduction of minus interest rate is for Japanese economy.

Some people think minus interest rate leads to moral hazard, but it is only misunderstanding caused by lack of essential understanding of interest rate. Under the condition of minus economic growth rate, value of currency decreases averagely. It is theoretically inevitable conclusion for bad debts to increase without introduction of minus interest rate.

Improvement of banking system

What might be maximum neck in introduction of minus interest rate is position of bank. In banking works, it is basic to collect deposits and to lend it. Plus interest rate is applied to both cases (current system). Banks ensure profits in such a way that interest rate on loans is higher than interest rate on deposits.

If minus interest rate is introduced, it is difficult to collect deposits. Depositors must pay interest to bank with minus interest rate. So, considering this point only, it is improbable to deposit. It means that banks can't collect funds. Therefore, it is necessary to establish funds collecting method of banks.

It may be most effective for the Bank of Japan to supply funds to banks with minus interest rate. Looking on basic interest rate of Japan as minus, it is no problem that interest rate on loans of Bank of Japan is minus. Assuming interest rate on loans of banks to private company is a little higher than interest rate on loans of Bank of Japan. Then, banks can ensure profits just as much as difference of interest rates.

What should be considered is whether supplying money to private company (bank) with minus interest rate is OK or not. Supplying money with minus interest rate is to give money. Therefore, there may be opinion that "minus interest rate should be introduced after banks are nationalized". Sufficient consideration will be necessary from now on.

If whole money in Japan is taxed as realization method of introduction of minus interest rate, deposit can be collected. It is to give merit like free of tax etc. to depositors. If interest paid by deposit is smaller than tax, Deposit has merit naturally.

Consideration of methodology of bad debt disposal is necessary. Bad debt has been thought to be management responsibility, but it can be understood it is not necessary so by the explanation of this book.

If interest rate on loans is higher than economic growth rate, bad debt increases as much as interest caused by the difference of both rates. It is theoretically concluded. Therefore, present economic system that doesn't permit minus interest rate although economic growth rate is minus is root cause of increase of bad debt.

Nevertheless, that banks as private company are burdened all disposal cost is essentially misplaced. After explanation of it to nation, it may be time for government to disposes of bad debt directly.

Capital of banks decreases because banks are wholly burdened paradox of economic system failure. Though banks have responsibility of occurrence of bad debt just after bubble economy, the cause of recent new occurrence of bad debt has been control error of interest rate. Therefore, it can't be helped that to thrust all bad debts upon banks is said to be shirk of government or the Bank of Japan.

Change of interest rate decision rule

Deposits or insurances etc. are contracted with plan of future interest rate in financial institution, but it is theoretically impossible.

Basic interest rate changes with scale of economy change. In short, future interest rate can't be decided in advance. To decide interest rate in advance is too risky for both financial institution and contractor.

Controversy of cutting guaranteed yields of life insurance is a result of increase of contract without understanding of essence of interest rate. Guaranteed yields of insurance just after bubble economy has been over 6 %. In this case, it was natural for insurance company to lose money without economic growth rate about 6% in Japan every year. As contract balance has been increased without understanding of essence of interest rate, management of insurance company has been deteriorated.

Therefore, interest rate should be changeable with economic situation (minus may be used.). Financial institution should contract on condition of it. By system improvement like this, stable management can be continued.

Increase of assets caused by minus interest rate

What may be the first problem by introduction of minus interest rate is decrease of assets. As minus interest rate decreases currency, assets decrease naturally.

[Minus interest rate may not be accepted in terms of depositor protection.]

Opinion like this may be expressed. But, please think of it calmly. If plus interest rate is continued under the condition of minus economic growth rate, amount of currency increases, but value of economy doesn't increase. Debtor's loss over the increase of currency occurs under minus economic growth. This is the reason for bad debt occurrence. Received interest is paid by debtor's loss. Therefore, it should be

considered that economic value doesn't exist in received interest. After all, depositor can't be rich essentially by continuing plus interest rate under minus economic growth. Amount of currency merely becomes more than scale of economy.

As a result of interest rate over economic growth rate, richness can't be grasped by the amount of assets of deposit etc.. It is because real economic value is less than amount of currency.

Minus interest rate is needed to decrease the difference. By introduction of minus interest rate, burden of loan of companies decreases and employment increases. As increase of labor leads to increase of income, consumption increases. Increase of consumption leads to expansion of economy and additional value of economic activity increases. Nation can be rich by the increase of additional value. If economic growth rate becomes plus, interest rate can also be plus.

After all, minus interest rate should be introduced to deposit to recover economy under the condition of minus economic growth, without maintaining plus interest rate of deposit. It leads to rich life. If it becomes common recognition of nation, recovery of Japanese economy will not be so difficult.

Old people or people who are unable to work may feel uneasy in their lives because assets decrease by minus interest rate. But economic recovery by minus interest rate leads to increase of profit of company and tax income. Richness of nation increases. Proper distribution of this richness makes old people rich.

Excessive pursuit of asset may be the cause of falling birthrate. Continuity of plus interest rate is excessive burden of interest for debtor. As a result, companies decrease labor cost and number of regular staff of young people decreases.

Balance of national bond / local bond has been increased excessively by the cause of plus interest rate, and repayment burden of it is heavier for young people. It is because repayment period is longer for young people. If balance of debt is 700 trillion yen, balance of debt is about 5.5 million yen per head of nation. Balance of debt of young people is about 10 million yen per head. Thus, balance of national bond / local bond is debt of young people for old people. Young people are poor as much as richness of old people.

As a result, young people feel atmosphere of [We are not rich]. As they are not stable economically, they can't feel room. As they feel uneasy in the future, they do not want to increase the number of child.

The only way to solve this uneasy is for young people to be rich. Minus interest rate should be introduced for this purpose.

Minus interest rate decreases the amount of asset / debt. Balance of national bond or

local bond decreases naturally. As debt repayment burden of company is reduced, employment is increased. Then, the number of official staff of young people may increase. Stability of social position solves uneasy in the future and increases birthrate. Then, aging problem of Japan is solved. Increase of number of child makes whole nation rich.

After all, the more people are cling to plus interest rate and possess asset with heat, the more huge debt occurs and whole nation get poor. The reason why American economy, saving rate of which is lower than that of Japanese, maintains No.1 scale and influence in the world and Japan can't catch up is that American people consume positively. Therefore, it may be necessary for Japanese to learn proper consumption and proper saving. Then, economy is much more revitalized.

Asset is Japanese economy itself for Japanese people. Therefore, to realize situation of stable evolution of economy is best way to increase asset. It leads to stable life. It is necessary to introduce minus interest rate for this purpose.

Reconstruction of economic theory

As explained in this book, it is clear that classical economic theory has deficit. There is no theoretical root for the concept of plus fixation of interest rate. As plus interest rate has been the premise of classical economic system, it has been followed in construction of the theory.

The biggest paradox of economic theory is for both market principle (free price competition) and plus interest (expansion of scale of economy) coexist at the same time. Sales powers are competed in the market. Prices are varied up and down naturally. Economy expands with average price increase, but economy is reduced with average price down.

On the other hand, premise of plus interest rate is only expansion of economy, and reduction of economy is not supposed. Therefore, these two premises aren't realized at the same time. In short, economic theory conflicts from the beginning. Therefore, it is not completed as theory. Economy is managed under the uncompleted theory, situations of economic crisis are happened very often. If price decreases drastically and scale of economy is reduced, it contradicts to plus interest rate (expansion of scale of economy) and paradox of economic theory is revealed.

If minus interest rate is introduced, market principle (free price competence) and interest rate (expansion / reduction of scale of economy) don't conflict each other and degree of completion as theory goes up dramatically. Therefore, it is necessary to reconstruct economic theory by introduction of minus interest rate.

Present paradox of economic theory leads to destruction of economy as described below.

If price decreases drastically under plus interest rate, bad debt occurs. As bad debt smashes up companies and diminishes scale of economy, bad debt increases additionally. Scale of economy continues to diminish in this way. It is occurrence of what is called “Deflationary spiral”. But currency increases with plus interest.

This situation being continued, difference between amount of money and scale of economy becomes larger. Amount of currency becomes much more than real economy. Then, confidence in the currency is lowered. If confidence in the currency is lost, the funds can't be collected without high interest rate. If interest rate of the funds rises, whole interest rate rises drastically. Then prices rise drastically in conjunction with it. Occurrence of what is called “hyperinflation”. Scale of economy expands sharply by sharp rise of prices. Amount of money and scale of economy correspond in the end in this way.

But, process of sharp rise of prices means destruction of economy. It means stability of economy is lost. Therefore, sharp rise of prices like this must not be happened.

Present economic theory assumes situation of destruction of economy. But economy is our life itself. It must not be destroyed. Therefore, we must not manage economy on the basis of this economic theory. Present economic theory can't be used practically without amendment.

The reason of unstable economic situation is that scale of economy and amount of money differ largely and credit of currency is lost. As credit of currency is not lost without the difference, economy doesn't become unstable. Then stable management of economy can be continued.

Recently rating of Japanese government bond has been lowered because excessive volume of Japanese government bond has been issued compared to scale of economy. Credit of yen has been lowered. If plus interest rate is continued when scale of economy diminishes, amount of money and scale of economy differs, so credit of currency is lost.

If minus interest rate is introduced, amount of money and scale of economy always correspond, so stable economy can always be managed. Stable economy leads to stability of society.

For the above reasons, it can be understood that both reform of economic system by introduction of minus interest rate and reconstruction of economic theory are necessary assignments.

Solution of deflation problem

Economic evolution will quiet down at some point. For example, there is population problem. As population increased rapidly in the 20th century, economy expanded rapidly. In addition, realization of new scientific knowledge leads to rapid increase of kinds of products.

But, population may quiet down at some level from now on. Increase of population doesn't seem to continue. Increase rate of population in the world may decrease.

In addition, as evolution of physics that is center of scientific theory is stopped, development pace of new products may become slower than that of the 20th century.

Then, companies will ensure profit by price competition. IT progress urges worldwide price competition.

If population increase is stopped and newly developed products are scarce and price competition is escalated, it is not strange for scale of economy to be changed from expansion to reduction. It is occurrence of what is called "deflation".

It is insisted that deflation as universal issue should be overcome. Deflation is called as bad factor of economy. Whenever deflation occurs, it is not mysterious for the above reasons.

The problems are both classical economic theory under the premise that interest rate should be plus and economic system based on it.

Interest rate is economic growth rate itself. Without understanding of this essence, it is natural to fear deflation that means minus economic growth rate under the economic system in which interest rate is fixed to plus.

But, if economic system on the premise of minus interest rate is realized, deflation can be disposed of compatibly. Minus interest rate should be applied to minus growth rate. Then, economy can't be crashed.

First of all, minus interest should be introduced in Japan as a model of global economy. Then, the world takes it as a model. Deflation problem can be solved in this way.

In this sense, economic system on the premise of minus interest rate should be constructed as soon as possible.

What is real richness

What is [richness]? When economy develops and productivity is increased, necessary goods / services can be offered by shorter labor than ever before. Leisure

such as hobby etc. or another free activity can be done in spare time.

But, if productivity is increased, prices are inclined to decrease by price competition in present economic system. Economic growth is stopped and deflation occurs in some cases. As deflation can't be compatible with classical economic system on the premise of plus interest rate, it leads to destruction of economy. In order to avoid this paradox, scale of economy must be expanded by offering new services with rapidity.

In short, no matter how hard we work, stable management of the economy can't be continued without continuing to work much more. The reason why modern people can't realize short time working is the paradox of economic system.

But if minus interest rate is introduced, paradox doesn't occur in economy. Stable management of economy is continued. Therefore, concept of works for the purpose of economic expansion goes away. New services should be developed if needed. As development burden is decreased, labor time is shortened. In this way, free time is incremented and we can enjoy spiritual richness.

Essentially, economical development leads to richness like these. But we must expand economy desperately under economic system with plus interest rate. Economy doesn't exist for the purposes of our lives, but our lives exist for economy. We can't understand the purpose of our lives under these conditions.

Therefore, it is necessary to introduce minus interest rate in order to enjoy real richness. Introduction of minus interest rate leads to feeling at ease of our lives.

Career and Achievements of Akira Takizawa. (Writer)

Date (YYYY/MM/DD)	Career and Achievements
1985	He has started religious activity.
1989	He has graduated from the University of Tokyo, and started career in Mitsui Bank. (Now it is called Sumitomo Mitsui Banking Corporation.)
1994	He suggested to the bank. "Revolution in information will happen from now on. PC will be bank. System should be strategic division." After the suggestion, The Sakura Bank (Now it is called Sumitomo Mitsui Banking Corporation.) was far ahead of banking circles through IT strategy to establish Japan's first internet bank (Japan Net Bank) and so on. It led to IT introduction in every industrial circle and IT strategy in Japan. Suggestion described above made great contributions to IT strategy in Japan.
1995/06	He was assigned to General Planning and Policy Division. He was in charge of ALM.
1999/07	He surpassed both Buddha and Jesus in spiritual rank.
2000/06	He left the Bank to make a study on five dimension and so on.
2000/12/31	He accepted pyramid figure (Creation principle of all things, equipment for generation of magnetic field energy (Human activity energy)) from above. It was the advent.
2001/09	[The Day to Surpass Buddha] was published.
2003/02	[Five Dimension Theory] was published. It was theoretically explained in the book that world was fractal structure. (Space was involved in dot). Necessity to revise physics wholly by introduction of five dimension was advised in the book.
2003/06	[Introduction of Minus Interest rate] was released. Economic theory was restructured to revive economy in Japan. It was theoretically explained that interest rate and rate of nominal economic growth should agree. It was proved at the same time that the cause of depressed economy in Japan after the 1990s was much higher interest rate than rate of nominal economic growth. It was claimed that both business and financial recovery should be made by higher rate of nominal economic growth than level of interest rate. After delivery of this discourse to government and the Bank of Japan etc., it was spread in Japan that it was necessary for interest rate to be lowered, and it made great contributions to business recovery. It has been theoretical ground of low interest rate policy around the world after the Lehman crisis.
2004/01	Property to store electromagnetic wave was confirmed in fractal structure. (On the front page of The Asahi Shimbun.). A part of contents of [Five Dimension Theory] was confirmed academically.
2005	He began to write sequel of [Five Dimension Theory]. Fundamental structure was

	delivered to the Physical society of Japan etc..
2005	He has entered into heavenly world. (It is world of tutelary gods.).
2006/11	[Five Dimension Theory Vol. 2] was released. It was delivered to the Physical society of Japan etc..
2007	[Introduction of Option Concept to Money], [Restructuring of Foreign Exchange Theory] were released. It was delivered to various quarters.
2008/06	Kagayaki-No-Kai has been established to relieve humankind. [Fundamental Principle to Relieve Humankind] was released.
2008/10	[Wholly Revised Financial and Economic System] was released.
2009/08	[Fractal Economic Theory (this book)] was released. It succeeded in theoretical analysis of the cause of bubble economy.
2009/10	[Five Dimension Theory Vol. 3 principle of recognition] was released. Outline of five dimension was explained.
2011/10	[Five Dimension Theory Vol. 4 principle of space creation] was released.
2011/11	He has entered into creator world.
2011/12	Life-prolonging / Longevity Service has been started. Lifespan extension of humankind has been started.
2011/12	Equipment for generation of magnetic field energy (aura) was released. He succeeded in generation of magnetic field energy (aura) mechanically.
2012/7	He presented recommendation titled “Nuclear power must be abolished” to Prime Minister Noda. As a result, new energy policy named “Innovative energy / environmental strategy” aimed for “All nuclear power will be nonoperating in the 2030s” was announced from government on September 14, 2012.
Present	President of Kagayaki-No-Kai.

Update history of English translation.

2016/7/9	Arrows in page 6 are reversed. (According to Japanese version) occurs → causes (page 14)
2016/10/3	credits → credit (page 5) C occurs ¥100 → C issues ¥100 (page 5) car productivity → car production (page 7) summed up to sum up → summed up by summing up (page 7) in order to simple → in order to simplify (page 7)
2016/10/4	To grasp amount of daily occurring transactions → Amount of daily occurring transactions (page 7) currency occurred daily → currency occurring daily (page 7)

- 2016/10/9 change ratio of transactions for a year
 → change ratio of amount of transactions for a year (page 7)
 growth rate” is used → growth rate” was used (page 8)
 is easily understood. → can easily be understood. (page 8)
 Economic growth in this book
 → Economic growth rate in this book (page 8)
 resembles economic growth rate in this book in meaning
 → is close in meaning with economic growth rate in this book (page 8)
- 2016/10/16 in that cash is used → in which cash is used (page 8)
 Value of currency is occurred → Value of currency occurs (page 8)
 by being multiplied by 100 → by multiplying it by 100 (page 9)
- 2016/10/17 why interest rate must be plus?
 → why must interest rate be plus? (page 1)
 How on earth interest rate should be decided
 → How on earth should interest rate be decided? (page 1)
- 2016/11/15 Economic value is given → As economic value is given (page 8)
 Assessed value of equity → Amount of asset of equity (page 9)
 equity increases → the asset increases (page 9)
 equity decreases → the asset decreases (page 9)
 what is happened? → what will happen? (page 10)
- 2017/6/25 willingness to invent → willingness to invest (page 11)
- 2018/1/24 essestially → essentially (page 11)
 called basic rate → called basic interest rate (page 12)
 may be not so small → may not be so small (page 12)
 is gone ahead with → will be gone ahead with (page 13)
 sequence of circulation → circulation of sequence (page 13)
 all currency (yen) is → , all currencies (yen) are (page 13)
 (no description) → No currency exists independently. (page 13)
 the whole currency are the currency that doesn't be distributed.
 → the whole currency is the currency that is not distributed. (page 13)
 10% of the whole currency became bad debt means that
 → That 10% of the whole currency became bad debt means (page 13)

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