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**Yongshik Choe and Hyun-jung Kim**

# A NEW APPROACH TO THE CAUSE AND PROGRESS OF FINANCIAL CRISIS FOR THE MANAGEMENT OF A FIRM AND THE NATION


## ABSTRACT

In this paper, we try to reveal the principles that cause the processing stages of economic crisis as follows. First, most of economic crises are caused by a financial crisis because financial variables have the biggest variation in the economy as the principles of credit creation and credit destruction work altogether. Second, most of financial crises go through three stages of manias, panics, and crashes as Kindleberger clarified. Third, manias are caused by the time-shift of demand from the future which increases further the current demand and raises the prices of real estate and stocks. Fourth, panics are caused by the hollowing-out of demand which is caused eventually by the demand time-shift, with bubbles broken. Fifth, crashes are caused by the principle of credit destruction which decreases the money amount by the credit multiplier, resulting in a financial crisis. When this principle of financial crisis is understood well, it would be possible to foresee the development of the financial crisis and to prevent some damages such as a bankruptcy due to a sudden lack of liquidity. Then the crisis management would be performed better than before. This paper would contribute to a successful business management and to the evolution of economics.


*Key Words: Financial crisis, Demand time-shift, Demand hollowing-out, Credit-destruction principle, Economic dysfunction*

**Yongshik Choe**
*Seoul School of Integrated Sciences & Technologies (aSSIST), South Korea*

**Hyun-jung Kim**
*Seoul School of Integrated Sciences & Technologies (aSSIST), South Korea*

**Correspondence: Hyun-jung Kim**
*Seoul School of Integrated Sciences & Technologies (aSSIST), South Korea*
*03767 46, Ewhayeodae 2-gil, Seodaemun-gu, South Korea*
E-mail: hjkim@assist.ac.kr



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## INTRODUCTION

In business, the management of risks is so important that a few companies have the position of Chief Risk Officers. No matter how competitive a company is, its life would be threatened if it fails to respond to the challenges of environment. So, what would be a fatal blow to the management of a company? One of such instances would be the crisis of the national economy. In history, even the companies that were regarded as successful went bankrupt when the national economy faced a severe crisis. The followings are the prime examples.

The US financial crisis in 2008 devastated many financial companies. For instance, Bear Stearns, ranked fifth in the US investment bank, was on the verge of bankruptcy and merged by JP Morgan in March 2008. Lehman Brothers, ranked fourth, went bankrupt on September 14. Merrill Lynch, which ranked third and belonged to a top-tier group, was acquired by BOA. The second-ranked Morgan Stanley was merged with JP Morgan due to a severe liquidity crisis. Goldman Sachs, the number one investment bank, also suffered a fatal blow. AIG, the world's number one insurance company, was nationalized temporarily with a large-scale of public funding program on September 16. Other banks such as IndyMac, Washington Mutual, and Wachovia disappeared. And Citicorp, a mega-sized commercial bank, also received a large amount from the public fund on the verge of bankruptcy. The crisis hit hard not only these financial firms but also most general companies in the real sector with few exceptions.

There were other examples in the history. Faced with the collapsing risk of NASDAQ in 2001, most of venture businesses that had sprung up like mushrooms after rain were hit hard or went bankrupt except a handful companies. Even the companies that had won the business race suffered a devastating blow, and the entire venture industry was in the crisis of collapse. Some experts said at the time that the era of venture industry was over. However, after the economic crisis subsided at last, the surviving venture companies have striven again, and the number of start-up companies has steadily increased in the industry.

There is no end in other cases. Consequently, it is reasonable to assume that a national economic crisis has a mortal effect on the management of a company. Then what is expected if a company can foresee the looming crises in the national economy and responds appropriately? Naturally, the company would not only escape from an existential crisis such as bankruptcy but also easily outperform its competitors. So, all the companies need to notice the symptoms of national economic crisis as early as possible.

If the person in charge understands the economic principle depicting the mechanism that causes crises of the national economy with a little amount of training, he or she can equip with the skills that enable them to foretell the crises. This paper shows the economic principle that makes it possible. Although this principle is not known widely, it helped for some experts to predict accurately the financial crisis of 2008 in the USA and the currency crisis of South Korea in late 1997. Therefore, anyone would easily realize its power if he or she applies it properly to the battlefield of business management or other related fields of interest. We believe that this principle of financial crisis we are about to present would contribute not only to a successful business management but also to a critical advancement in economics.

This paper is organized as follows; the first section is the introduction of this paper as above, the second section deals with the theoretical considerations about the financial crisis, the third section investigates the reason why most of the economic crises go through a financial crisis, the fourth section researches the reason for the repetitive occurrence of the financial crisis, the fifth section inquires a general principle about the unfolding process of a financial crisis, and the last section concludes this paper with a summary of the main findings and proposes future works.

## THEORETICAL CONSIDERATIONS

There is an uncountable number of studies about the crises of the national economy. How have not those excellent economists paid proper attentions to the Great Slump during 1873~1896 and the Great Depression from 1929~1940! At first, most economists regarded the crisis as it happened in the process of the business cycle. According to these researches, the factors causing the business cycle vary as follows; the difference between cost and price (Marshall and Marshall, 1879), the gap between the natural interest rate and the market interest rate (Wicksell, 1898), currency circulation (Mises, 1912), credit (Hawtrey, 1919), deflation (Pigou, 1927), relationship between marginal efficiency of capital and interest rate (Keynes, 1936), creative destruction (Schumpeter, 1939), and so on.

However, they paid little or no attention to the financial crisis which used to cause the economic crises and disasters although they confirmed that financial variables drove business cycles and economic crises as above. The academic recognition of the importance of the financial crises got the proper position only after the Latin countries suffered the economic hardships caused by the financial crisis in the 1980s and became definite after the currency crises of Asian countries in the late 1990s. Even the studies for the alarming indicators against economic crises went underway since the 1990s, and the milestones were achieved by some economists (Lindgren, Garcia, and Saa, 1996; Goldstein and Turner, 1996; Kaminsky, Lizondo, and Reinhart, 1997). But their findings were incapable of predicting the crises in advance due mainly to the lack of scientific ground. And the theoretical basis of why and how these economic variables operate as alarming indicators against the crises was also fragile as the crises occurred several times despite that these alarming indicators were fully in place in the academic sphere. Especially, the US financial crisis in 2008 raised questions about the usefulness of such a system of alarming indicators.

After the US crisis, many research got conducted to clarify its cause, and selected some of them are as follows; high investment leverage and financial derivatives that exploded due to the easing policy of legal and institutional regulations on financial instruments (Fostel and Geanakoplos, 2008; Barro 2009; Reinhart and Rogoff, 2009; Crotty, 2009), the national debt (Rogoff, 2009) which was based on the researches in the past (Fischer, 1933; Obstfeld, 1986; Bernanke, 1983; Park, 1991; Rochet, 1992; Calomiris, 1993; Kiyotaki and Moore, 1997; Demirguc-Kunt and Detragiache, 1998; Basu and Taylor, 1999), credit-line drawdowns (Ivashina and Scharfstein, 2010), housing bubble (Financial Crisis Inquiry Commission, 2011), liquidity risk management (Cornett, McNutt, Strahan, and Tehranian, 2011; Campello, Giambona, Graham, and Harvey, 2011), and Corporate governance (Erkens, Hung, and Matos, 2012). However, they concentrated only on the cause and the result of financial crisis. To foresee the crisis accurately, it is necessary to find an economic principle that governs both the cause and the unfolding process of the financial crisis.

It would be the principle of Manias, Panics and Crashes (Kindleberger, 1978a) that covered all the root, developing process and result of financial crisis. In fact, it has been cited by more than ten thousand researches (White, 1990; Palma, 1998; Naqvi, 2019). To our viewpoint, this principle needs to be upgraded to its best potential by careful researches around the world. With the finding of the factors that cause eventually the Manias, Panics, and Crashes, and the soundly established economic principle about the roots, developing processes and consequences of the crisis, we would be in a position where we can predict the financial crises with a dependable level of confidence. This paper reveals the factors and their operating principles as follows. Before going into detail, we investigate first the reason why most economic crises go through the financial crisis because it will enable us to foresee economic crises by checking the possibility of the financial crisis.

## THE REASON WHY MOST OF ECONOMIC CRISES GO THROUGH IN FINANCIAL CRISIS

Major crises of the national economy that strike big blows to the management of a company and the nation are depression, economic panics, financial crisis, currency crisis, hyper-inflation, long-run slump, and so on. Looking closely at these crises, the symptoms that appear outside are different from one another, but their origins and developing processes are alike to each another. For instance, a currency crisis, accompanied by a financial crisis, leads to an economic crisis or a depression, and the policy initiatives to avoid the national crisis cause the hyperinflation observed in Latin America in the 1980s or a long-run slump just like in Japan since the 1990s. It is needed to look at them briefly.

First, most economic crises, depressions, or economic panics have occurred through the financial crisis. Any exceptional case is difficult to be found in the history. Next, the currency crisis has been accompanied by the financial crisis, which has caused the economy to retreat quickly. The former tends to develop into a financial crisis while the latter occurs on its own. Especially, when a currency crisis occurs, a financial crisis happens almost simultaneously or follows soon. So, the financial crisis and the currency crisis are often called as 'twin crises' together. It would be reasonable to include the latter into the former since most nations facing a currency crisis have also been engulfed a financial crisis.

Third, when a financial crisis or a currency crisis happens, the government increases its fiscal spending in order to restrain it, which spurs government-bond issuance raising interest rates and exacerbating the fiscal balance. When the sale of government bond is impossible, the economy becomes to be dependent on currency evaporation, which often results in a hyperinflation just like the Latin America in the 1980s. It happened also in the Weimar Republic of Germany after the end of World War I. The other instances are found easily in history.

Finally, the Japanese economy suffered from a financial crisis in the end of 1980s as the bubbles of real estate and stocks markets burst. The stimulating policies have been mobilized to prevent the economy from submerging into an economic depression by its government over a quarter century, which have resulted in a long-run slump since the marginal productivity of fiscal spending is usually lower than private sectors. Its long-run stagnation could be called a chronic disease while a depression is called an acute disease.

It looks like easy and simple for anyone to diagnose and to prevent economic crises since their roots are almost the same as written above. But economic crises coupled with a financial crisis have occurred repeatedly every 10 years on average in economic history although some financial crises are often overlooked even by economic experts because their damages on the economy are light when policy responses of the government against them succeed.

Why the financial crisis has occurred repeatedly, and why is it often left alone or almost ignored without any preventative measures organized by the government? It might be the reason that the very principle, which causes and drives a financial crisis, has not been clarified scientifically yet. If the principle is found and understood already, the government would not have left the crisis undisrupted. The crisis managements of a company and the nation would become easier than ever when the cause and progress of the crisis are elucidated sufficiently, which is the goal of this paper. If the manager of a company and the policymaker of the government to detect the occurrence of a nation-wide financial crisis in advance and the intellectual tools for scientific identification of the driving cause and progression of crisis are available, the crisis can be overcome by wise responses to it.

So why does the financial crisis cause most economic crises and depressions? It is because the volatility of a financial variable, money, is the largest among economic variables. Why is it? It is because the volume of money is increased greatly by the credit creation and reduced greatly by the credit destruction in the economy. The credit multiplier plays a decisive role in the fluctuations of money volume which has a great impact on the other economic variables. Therefore, it is urgent and important to find the economic principle of financial crisis which decreases greatly the volume of money in the economy.

Meanwhile, any recession in business cycle could be seen natural just like the four seasons in the nature if they do not develop into a severe crisis. Therefore, it would be reasonable to call the recession as an economic crisis which does not turn naturally into a recovery soon. This economic crisis has occurred repeatedly in history resulting in extreme pains of the people. Why cannot the government, which is responsible for the management of the national economy, have prevented in advance the recurrence of the crisis?

## THE REASON WHY THE FINANCIAL CRISIS OCCUR REPEATEDLY

All the financial crises have gone through three stages; manias, panics and crashes (Kindleberger, 1978b). In short, an enthusiastic climate of investment is appeared when the economy keeps a boom for a long time or the central bank supplies an excessive amount of money, which created manias. And, when the economic atmosphere cools down suddenly one day, there happen panics, and then the financial market confronts a crash soon.

In the stage of manias, investors become more optimistic about the future and more eager to borrow and lenders assess the risk of investment lower increasingly to make more loans than ever during the economic expansion phase. It is well known that manias are associated on occasion with general 'irrationality' or mob psychology (Kindleberger and Aliber, 2005b: 41). This irrationality encourages speculative manias to raise the prices of stocks and real estate, this hike of the prices encourages the speculation further, and it calls for the price hike again to develop eventually into speculative madness.

So, when do the manias occur through the irrational crowd psychology and how do they develop into panics? The history of manias and panics was replete with examples of destabilizing 'cob-web' responses to exogenous shocks such as soaring oil prices, devaluation, war, political turmoil and change, deregulation policy of the government, and so on (Kindleberger and Aliber, 2005c: 48). Are the fundamental causes of manias and panics clarified enough by the above analysis? From a scientific viewpoint, the above analysis is nothing but a renunciation of scientific inquiry. It abandons pursuing a scientific principle that is capable of clarifying the cause of crisis by depending only on exogenous variables. The above analysis explained the causes and developing processes of manias and panics with exogenous variables, not with a scientific principle.

What, on earth, causes manias to develop into panics and crashes? According to the above analysis, a series of events leads to the financial crisis as a standard model; some shocks cause expansion, the expansion phase turns into a boom, the affluence grows and spreads, the rise in asset prices stops suddenly, unrest is followed, and then asset prices begin to decline, in this case there appears a high probability of a panic followed by a crash (Kindleberger and Aliber, 2005d: 90). This analysis on the cause and development process of a financial crisis is worth noting. Rather it is a great achievement in this research field. It is well worth evaluating even the clear identification of 'manias → panics → crashes' which is the typical progression of a financial crisis.

But this analysis is somewhat lacking the scientific ground. Especially it is hard to say that the terms of manias and panics are rational. Rather, they are emotional terms and they do not fit with the science which should be based on rationality. It is also difficult to say that the reasons of crashes are scientific because the variables that cause them are just emotional terms. Policy prescriptions based on this emotional analysis might aggravate the economic destabilization further and impede a stable growth of the national economy. From now on, this paper examines scientifically its cause, its developing process, and a new theoretical foundation for the scientific approach to prevent and overcome it with less damage in the economy.

## DEVELOPING PROCESS OF THE FINANCIAL CRISIS

Economic crises including a financial crisis can be acknowledged hardly by the current economics since it is based on the hypotheses of rational behavior, general equilibrium, and efficient market as well known. However, they occur intermittently in the reality. Even the US economy, one of the most stable economies in the world, has undergone the financial crisis several times such as in the early 1980s, the early 1990s, the early 2000s and in late 2008, and has suffered serious economic hardships every time. The countries in Europe also have faced economic difficulties at the similar times when the US economy has confronted a financial crisis. Particularly in the UK economy, a severe crisis had lasted from the mid-1970s to the early 1980s. A financial crisis occurred also in the late 1980s in Finland, Sweden, Norway, and UK. In Latin American countries, a currency crisis and a financial crisis coincided with a hyperinflation in the early 1980s, leading to severe economic tribulations for many years until the early 1990s. Asian countries experienced currency crises in 1997 too. These facts prove how vulnerable the hypotheses of rational behavior, general equilibrium, and efficient market in economics are in the reality.

However, the financial community is aware of the financial crisis enough. In fact, the Bank for International Settlements (BIS) signed the agreement of BASEL I suggested by the Basel Committee on Banking Supervision (BCBS) with some countries in 1988 to encourage banks and other financial institutions maintaining a certain ratio of the capital adequacy; for instance, the equity ratio of commercial bank is more than 8%. However, financial crises occurred intermittently despite the agreement, and new agreements have to be implemented in stages such as the BASEL II which has strengthened the financial supervision function in 2004 and the BASEL III which has strengthened the market discipline in 2008. From now on, will not a financial crisis occur since these agreements strengthen the regulatory standards of financial institutions? Although the agreements have been renewed twice already, the crisis is unlikely to be prevented since the agreements ignored the root cause and the progress of the financial crisis.

Why do the economic crises including a financial crisis have happened intermittently? Is there any way to prevent, at least, their deteriorations? If the economic principle which causes a financial crisis and its progress is theorized scientifically, the reason of their intermittent occurrences would be clarified and a policy measure to protect the economy from it would be devised. And it would not be difficult to find the economic principle because most financial crises have gone through the processes of 'manias → panics → crashes', as known well (Kindleberger, 1978c).

What is the economic principle to cause the processes? From the conclusion in advance of this paper, manias are caused by the time shift of demand from the future, panics are caused by the hollowing-out of demand resulted by the former time shift, crashes are caused by the operation of the credit destruction principle which is the reverse process of the credit creation, and economic disasters are caused by the dysfunctions of the economy which is the reversed functions of the economy. These are main viewpoints of this paper. Now we would like to take a closer look at these issues as follows.

## Time shift and vacancy of demand

In the economy, there are some special goods that are consumed mainly by the income accumulated from the past as well as general goods that are consumed mainly by the current income. The former plays a crucial role in the developing process of a financial crisis. Real estate and stocks are typical goods which are consumed by the income accumulated for a long period of time and they play an important role in the occurrence of a financial crisis since the prices of such goods rise and fall very fast by the time shift of demand, unlike the prices of other general goods.

When the economy is brisk or the volume of money increases consistently, the prices of general goods rise in little time lag because their prices respond quickly to the economic change, while the prices of real estate and stocks, of which trades become active after the incomes of buyers have accumulated sufficiently, show a tendency to rise later than those of general goods. When the economy keeps brisk and income increases for a long period of time, the savings become big enough, and then the demand for these goods starts to be realized in earnest. These assets do not cause any serious problems if their prices stay stable. But, in the reality, the rising speed of their prices is much faster than that of general goods, creating an economic crisis someday in the future. Let's look at a typical example which is easy for anyone to understand, namely the housing market.

The demand for housing starts to increase after the savings of buyers get big enough, so the prices of housing begin to rise fast after then. The price rise in the housing market tends to be concentrated in a short period of time after the prices of general goods have already risen. The rising prices in housing market may tempt some people, who will have the ability to buy a house after saving for two or three more years, to buy it instantly. It is a strong temptation for them to buy houses with a big burden of debts since it seems difficult for them to buy houses in the future after their prices surge further, exceeding their amount of 2 or 3 years of additional savings.

What will happen then? Buying houses with a lot of debts means that the future demand moves to the present. When the future demand moves to the present like this occasion, the demand for real estate is increased further to raise their prices. Speculative fevers and bubbles happen like this fashion. These speculative breezes and bubbles will not last forever since the future demand has moved to the present. The demand of housing will be hollowed out someday since the demand, which is meant to be realized in the future, is shifted to the present already and then the prices of housing will plunge shortly and stagnate for a long period. It is a historical experience that the period has taken an average of around 10 years.

If the demand of a distant future continues to move into the present, its price decline may not occur. But this case is not sustainable because the surged prices are maintained only when the current demand and the future demand are combined and increased in size. Rather there appears a new trend that the present demand moves into the future when the prices decline. And then the bubbles turn off and the prices fall. The classic examples of this phenomenon happened in the Japanese economy in the early 1990s and the US economy in 2008. There are many other examples in history such as the crises of UK, Sweden, Norway, and Finland during the late 1980s and early 1990s, the currency crises of Thailand and Indonesia in 1997, the collapse of NASDAQ in the end 1990s, and so on. These phenomena are not limited to the real estate market. They are also common in the stock market. Sometimes they happen altogether in the stock and real estate markets and then there happens a serious finance crisis in the economy.

Manias, panics, and crashes occur in a sequential manner (Kindleberger, 1978d). So, is it right to see that the cause and progress of a financial crisis are fully identified already by this sequential process? It is our judgment that this clarification about the process is not enough. If manias, panics, and crashes have occurred sequentially and repetitively in economic history, the social science has to identify scientifically the factors that cause eventually the manias, panics and crashes. In short, manias become noticeable early by the time shift of demand, so that new manias that will appear in the future are able to be predicted by observing the sudden changes in the characteristics of current demand. And it can be identified scientifically why manias, panics, and crashes arise sequentially when the principle, that the time shift of demand causes manias, that the hollowing out of demand causes panics, and that the credit destruction causes crashes, is adopted.

In the previous study (Kindleberger, 1978e), however, it was professed that the manias appeared generally in the expansion phase of the business cycle, the prices of real estate and stock rose contributing to the increases of consumption and investment which accelerated the economic growth, experts often said no recession in near future, this optimism about the future spread, and asset prices rose furthermore (Kindleberger and Aliber, 2005e: 10). There cannot be found any convincing comment on why the rise in prices does not occur naturally but occur abruptly in the expansion phase in the book, “Manias, Panics, and Crashes, 1978.” So, the above argument is far from a scientific approach.

And Kindleberger asserted about the crashes that asset prices ceased abruptly to rise due to an event such as a change in government policy or a bankruptcy of a company which used to be considered successful, then the interest on borrowing became bigger than the profit of the investment, which turned dealers of real estate or stocks into sellers, and it might cause a plunge in asset prices followed by panics and collapses (Kindleberger and Aliber, 2005f: 11). However, on the scientific viewpoint, it is not right to point out incidents as the cause of crashes. It has to be found a scientific principle of panics that has happened repeatedly and inevitably. Only he claimed that the slowing economy was the cause of crashes. The scientific identification of why the economic slowdown happens and how it relates to the crashes of asset prices, is hard to be found in his book. And he did not identify whether the slowing economy was leading or lagging the collapses of asset prices. On the other hand, in our study, it is the difference of price rising between assets and general goods that causes the time-shift of demand resulting in manias, and the time-shift causes the hollowing-out of demand resulting in panics, as seen above.

### Operation of the principle of credit destruction

The time-shift and the hollowing-out of demand, which cause manias and panics in the real estate and stock markets, are insufficient to clarify the cause of crashes. Another economic principle is needed to clarify it sufficiently. It is the operation of the credit-destruction principle. This principle has occasionally worked for financial institutions to fall into crashes. Kindleberger and Aliber (2005g: 110) claimed also that the value of collaterals diminished when the asset price declined, the bank could not recover the existing bad loans, and this process was vicious. In reality, the terms such as credit crunch and credit contraction are often used. So, what is the difference between these terms and the principle of credit destruction? Is this principle of credit destruction known well already?

The terms of credit crunch and credit contraction are not based on a scientific principle. They are terms referring to the phenomena that occasionally appear in reality. Of course, there are some instances to pursue a scientific principle. For instance, Gene Smiley (2002: 38) claimed that if large numbers of banks sold securities in order to obtain cash to pay back panicky depositors, this would drive down the prices of the securities, and the banks might not have sufficient assets to cover their liabilities and thus would be bankrupt. But this analysis is insufficient because the credit contraction appeared in South Korea when a currency crisis hit its economy in 1997 even if the portion of the bank's securities was negligible. Therefore, it is much more convincing to explain the credit contraction by the principle of credit destruction. So how does the principle of credit destruction work?

The developing process of a currency crisis in Korea is one of the typical cases showing how a financial crisis is progressing. So, it would be reasonable to approach scientifically the general developing process of a financial crisis through the Korean case. The credit destruction began to take off as a result of the 'Hanbo Bankruptcy' that occurred in early 1997 as follows.

Only one year ago, money was overflowing in the market before the bankruptcy broke out. This overflowing money went to the stock market raising the stock index from 500 to 900 for two years and the real estate market was also bullish enough to cause a speculation. However, after entering in 2007, money was dried out in the market. Where did the abundant money suddenly go away? In short, money destroys credit as well as it creates credit. Unfortunately, not only the managers of companies but also economic experts know scarcely this principle of credit destruction because the current economics has not accepted it yet. However, it is natural that credit destruction happens as credit creation happens. This credit destruction principle worked in early 1997 when a conglomerate, Hanbo, went bankrupt as mentioned above.

At that time, the Korean economy was in a crisis of collapse. The deficit of current account was $23 billion in 1996, roughly equal to the foreign exchange reserves in the mid-1990s (BOK, 1999: 8). Naturally, the depleting crisis of foreign exchange reserve had been worsening. The deficit of current account was amounted to 4.7 percent of the GDP at that time, indicating that domestic income so much was transferred overseas to shrink its domestic demand. Though the capital account recorded surplus so much which meant the inflow of overseas income, it did not offset the effect of outflow of domestic income because the introduction of foreign capital increased the demand indirectly, while the current account deficit reduced the demand directly. Furthermore, the introduction of foreign capital became difficult increasingly due to the possibility of a currency crisis. So, its domestic economy began to retreat since the second half of 1996 and business balances of companies deteriorated day by day. As a result, Hanbo, with its very weak business balance, was the first to default in early 1997.

Hanbo's bankruptcy was not restricted to the collapse of a chaebol. It left bad debts of 6.4 trillion won (about $75 billion) to financial institutions which had lent them to Hanbo. This big amount of bad debts put pressure on the institutions to raise their reserves for the loan loss and to lower their equity ratio. This pressure made their additional loans and new investments impossible. Rather, it led into a serious situation in which their loans and investments had to be recovered. This aftermath caused a severe recession throughout the whole economy. There was no doubt that additional loans from financial institutions became much more difficult. Corporate bonds and bills that had already been issued returned to maturity and companies with poor business balance were unable to pay back. Then the companies rushed to the underground money market in order to survive and its interest rate surged.

The private lenders in the underground market, of which capital demand grew suddenly, increased funds by withdrawing deposits from the regular financial institutions. As the withdrawing of deposits increased, banks and other financial institutions had to increase their capital adequacy ratio. This fact caused a vicious circle putting pressure on the banks to reduce their lending and investment further. In fact, the narrow money (M1), the sum of currency and deposit, decreased by 11.4 percent at the end of 1997, while the amount of currency decreased only by 0.7 percent as the Bank of Korea (BOK) enforced a tightening policy (BOK, 1999: 2-3). The credit-destruction principle worked so earnestly that the funding market was nearly disappeared in the economy. Even the interest rate of commercial banks was raised to 15.3 percent at the end of 1997 from 11.1 percent at the end of 1996 (BOK, 1999: 5), while the interest rate of private lenders surged over 30 percent. Corporate bonds became more and more difficult to be repaid. As a result, small and middle companies went bankrupt by more than 30 thousand and even the chaebols such as Sammi, Dainong, Jinro, Haitai, Nasan, Hanshin, and Kia collapsed.

The principle of credit destruction means that the principle of credit creation works in reverse, so the multiplier of credit creation works similarly in the progress of credit destruction. To calculate theoretically the credit destruction caused by the non-performing debts of Hanbo which was 6.4 trillion won (about $75 billion) in early 1997, the decreasing amount of the liquidity aggregate (M3) was estimated about 200 trillion won (about $1,500 billion) since its ratio to currency was about 30 times at that time. The amount was one third of the total liquidity aggregate. In short, a financial crisis could not help break out. It was a situation as if a third of our body's blood flowed out to face death. Therefore, it was inevitable for the Korean government to prevent the credit destruction by investing the public fund 160 trillion won (about $1,144 billion) in 1998. Some economists insisted that it was free money after the crisis was overcome but they said as if the crisis overcome was not necessary, leaving the economy to ruin. However, it is essential that anyone must pay for the medicine and operation if he suffers a disease. The same was a financial crisis.

## Operation of the Economic Dysfunction

Why does a financial crisis often lead to an economic disaster? Now we would like to solve this problem from a scientific viewpoint. To liken, the infection of pathogens does not always cause a serious disease. A human body becomes ill when its immune system fails to overcome the pathogens or one of the physiological functions is out of order. The same is true in the economy. An economic disaster happens when the shock-absorptive capacity of the economy cannot overcome an external shock or when a function of the economy is broken. Especially when an external shock or a credit crunch provokes the dysfunctions of the economy to operate, a catastrophe happens at last. So, what are the economic dysfunctions and what happens when they operate? To understand the economic dysfunctions, it is essential to clarify the functions of the economy.

Five functions as below are particularly important in the economy; the division of labor, domestic trade, international trade, economies of scale, and credit creation. The productivity of the economy improves when the division of labor is active. The division of labor is promoted, the production scale is enlarged and the market is expanded when domestic and international trades become active. And the economic activity is promoted by the credit creation which enlarges the amount of money and credit in the economy. The economy cannot help shrink if such functions are suppressed by an external shock or the credit destruction. It does not shrink as much as the effect of economic functions, but it produces the adverse effect several times by operating the vicious cycle. Thus, the destruction of labor division, reduction of domestic trade, protection of international trade, market shrinkage, and credit destruction often cause a catastrophic crisis in the economy.

Does this vicious cycle last forever? No, it does not. Just a human body has the immunity system against diseases and is resilient soon, so does the economy. Anyone can die from a disease, but the economy recovers someday even when it is driven to a catastrophic situation. In fact, most recessions have been going to turn into economic upturns someday. Even during the Great Depression, the economy turned to upward direction from 1935 to 1936 despite that it had experienced a severe recession in the early days. In this regard, the economy might be better than the human body.

Logically, it is normal that the economy declines further since the vicious cycle operates when a recession appears. Why does not the economic recession result in an economic breakdown? Why does the economy arise shortly? It is because there appears a time lag between production and consumption as follows. The production slows down faster than the consumption even though the latter declines, while the declining speed of the latter is slower than the former when the recession lasts for a while, which plays a crucial role in reviving the economy. When the consumption is bigger than the production, a producer's market is created leaving much more profits to companies even in the recession. In the producer's market, consumers come first to producers because the production is less than the consumption, reducing the costs of sales, promotion, advertisement and transportation. Then the accumulation of inventory rarely occurs, and its cost is reduced too.

Why does the response speed between the production and the consumption appear differently? It is a natural characteristic, in which the property formed by the accumulation of past income plays an important role. In other words, the consumption of goods is essential for a person to maintain his or her life, so the consumption is done even by selling a property that has accumulated by the income in the past. This fact naturally leads to a slower decline of consumption than that of supply, which restores the economy in the end.

In this sense, a financial crisis is far more dangerous than other economic crises. It is because a financial crisis reduces significantly the value of assets such as real estate and stock. It means that the value of property to sell for consumption is decreasing when a financial crisis happens. This is one of the most important reasons why every financial crisis has hit a catastrophic recession in economic history. The Great Depression was especially evident. The crash of stock market led to a financial crisis, resulting in a sharp and long recession. In the early 1930s, the financial crisis collapsed almost all the banking system and led eventually to the Great Depression (Feinstein, Temin, and Toniolo, 2008). It is another reason why the research about economic crises has to be focused on the financial crisis.

Even this financial crisis does not last for a long time. There appears eventually an upturn of the economy someday by creating a producer's market where consumption is bigger than production even when the economic recession continues due to a financial crisis. So, what was the reason for the Great Depression went back down again and lasted for a long period of time after a short recovery in 1935 and 1936? The fiscal and monetary policies in US played the most crucial role; in 1937, the Federal Reserve System (Fed) began using the newly acquired power to raise the bank's reserve readiness and the Roosevelt government began to reduce its fiscal spending to balance the budget (Gordon, 2004: 346). The result was a new recession.

The economy goes back into a vicious circle even when it shows a resilience if improper policies are enacted to exacerbate the economy as above. The economic policy, which is considered as a prescription to overcome a crisis, occasionally gets the economy worse. Here is another reason why a scientific approach is needed to overcome economic crises. If the scientific principle of the financial crisis is clarified by a scientific approach, it would be possible for policymakers to avoid the choice of a wrong policy which causes a vicious cycle rather than heals the economy. It would be found also the way to overcome economic crises with minimum cost and little suffering. And political measures would be prepared to minimize the bad after-effects of an economic crisis when political or clinical experiences are accumulated.

## The principle that a financial crisis spreads worldwide

The Dollar as an international reserve currency has to be supplied enough in order for the world economy to grow ordinarily and for the world trade to increase regularly. In this sense, the US deficit of current account in international payment, which means the supply of dollar, plays an important role in the growth of the world economy and the increase of international trade. Meanwhile, the supply of dollar into the world economy is not limited to the amount supplied. It operates the principle of credit creation by raising savings and investments repeatedly through financial institutions worldwide. In reality, the countries, of which current accounts record a big surplus such as China, Japan, Germany and oil-exporting countries, have invested into the bonds of various countries and have made large deposits in multinational financial firms, which have reinvested into many places in the world. Thus, the amounts of international currency and credit have been increased by the credit multiplier and by their circulating velocities.

What happens when a financial crisis occurs in a country with a big economy? The international financial market falls under the pressure of credit destruction, and then the world economy has to be operated with less money and credit. So, the countries with a large deficit of current account or with unstable economies often face currency crises. The values of their currencies fall fast causing foreign exchange losses and then foreign capitals go out abroad to avoid the losses. When this misfortune happens in a big country, the investment volumes of multinational financial institutions decrease very much, and it causes a vicious cycle by calling for the decrease of financial assets in the world. Eventually, there happen currency crisis and financial crisis simultaneously in the countries that have borrowed much foreign funds and have recorded a big deficit in the international payment because the rollover of foreign debts becomes difficult. Then the principle of credit destruction works in earnest to cut the money supply furthermore in the world economy, which causes the global economy to fall into crises rapidly.

As a result, the balances of multinational financial institutions are seriously deteriorated, accelerating further the operation of the credit destruction principle and deepening the credit crunch in the world economy. This global credit crunch has a huge impact on the countries even where the financial and currency crises do not occur. Particularly, the country with a poor balance of current account, with a large foreign debt, or with a small size economy is seriously affected by the twin crises. That is why the financial crisis of a single country is deadly infectious to other countries. When the principle of credit destruction occurs in the world economy, the credit multiplier works to shrink the amount of foreign exchange reserves. It makes the economic situation worse and develops into a global financial crisis.

The US financial crisis in 2008 due to the sub-prime mortgage crisis also produced this developing process of the financial crisis worldwide. In the meantime, the countries that had recorded deficits in current account had been able to borrow foreign debts before the global financial crisis, but after the crisis becomes pandemic, they could not borrow anymore since the credit destruction became serious and the money amount was reduced in the world economy. Their foreign reserves were depleted due to the inability to import new foreign funds. So, what happened at the end of 2008 was the currency crisis in Latvia, Poland, Hungary, Ireland, Greece, and so on, which weakened further the international financial markets, eventually grew to a global crisis.

To find similar cases to these is much easier in the history of the world economy. For example, when Thailand fell into a currency crisis in the spring of 1997, it soon spread to neighboring Indonesia. The aftermath pushed South Korea to outbreak the biggest tsunami in its history in late 1997. Even the countries such as Malaysia and Hong Kong whose international payment balances were relatively sound and far from the depletion crisis of foreign exchange reserves suffered economic difficulties. And Japan which was the second largest economy in the world at that time also suffered a grave damage. In 1998, Russia declared a moratorium on its international payment and suffered economic pains seriously which were difficult to compare with other countries. Latin America, where the currency crises had often occurred, did not escape from the deadly impact.

In 1995, there happened a financial crisis in Mexico, which required bailouts provided by the IMF and the United States. This currency crisis infected Argentina, Brazil, Bolivia, Ecuador, and Paraguay in Latin America. Its worldwide contagion reached to Azerbaijan in Central Asia, Cameroon and Swaziland in Africa, and Croatia and Lithuania in East Europe far from Latin America, which couldn't escape from suffering the severe economic difficulties. Before these cases, in 1989, a financial crisis caused severe economic hardships in New Zealand, which was transmitted to neighboring Australia. In the same year Finland, Sweden, Norway, and England also experienced financial crisis, which spread to Poland, Czechoslovakia, Hungary, Romania, Greece, Brazil, Egypt, and Algeria. The USA and Japan also had to run hard to avoid a recession in around 1990 when the financial crisis broke out. And in 1980, the currency crisis in Argentine infected most countries in Latin America including Brazil, Mexico, Chile, Colombia, Ecuador, Uruguay, Venezuela, and Peru. The currency crises of these countries evolved into financial and fiscal crises, resulting in hyperinflation of a few thousand percent. In the same period, South Korea, Egypt, Congo, Ghana, and Turkey also suffered currency crises.

## CONCLUSIONS AND FURTHER STUDIES

Although an economic crisis is likely to get a catastrophic impact on the managements of a company and the nation, its damage could be alleviated if the crisis is noticed early by mangers of companies and officers in charge of the government who understand the principle of the economic crisis well and train themselves with a few exercises. So, the case studies are needed to be researched for the training. And then the development of a crisis can be perceived more easily than ever when following principles are understood well with some training.

First, the goods in the world are divided into two kinds; the one is consumable goods and the other is the goods of which value maintains or rises consistently. The latter plays a decisive role in the occurrence of economic crisis. The prime examples of such goods are real estate and stocks. When the prices of real estate and stocks begin to rise rapidly, their future demand moves to the present, and this time shift of demand leads eventually to the hollowing out of demand someday in the future, which causes their prices to plummet. Then the financial market faces a fatal crash.

Second, most economic crises take place through a financial crisis because financial variables show the greatest variation in both the speed and the scale in the economy. And the reason why financial variables show the biggest fluctuation in the economy is because money drives not only the credit creation but also the credit destruction. This credit destruction along with the credit creation causes a big fluctuation of the money volume in circulation by its credit multiplier, which leads ultimately to a financial crisis. Especially, it is not wrong to say that a financial crisis has already begun to take place when the diminishing of demand coincides in the real estate and stocks markets or when the prices of the assets begin to plummet.

Third, the economic variables that have positive effects in the economy become dysfunctional when a financial crisis starts up and the economy begins to retreat. Then, the amount of money that plays the same role as the blood in the human body becomes to contract fast by the credit multiplier. Above all, when the economic functions such as division of labor, domestic trade, international trade, economies of scale, credit creation, and so on are suddenly shifting to a situation where they are suspended or rather deteriorated, the real economy operates a vicious cycle and causes the financial economy to fall further, resulting in a crash of the real economy as whole.

To conclude, it would be possible for the person in charge to realize early on the commencement of a financial crisis and to prevent its catastrophic damage such as the bankruptcy of a company that stems mainly from a lack of liquidity if the person has a good understanding of the above principle of the economic crisis with some amount of training amassed. And then it is not surprising that the crisis management of either the nation or a company would perform better than others and before. Unfortunately, despite that the management of the national economy is alike to the management of a company, economists often ignore the failure of economic policy, while business management regards it very important. We expect that this paper would also contribute to the outstanding management of the national economy by establishing correct and proper policies.

As this paper discusses the economic principle of the financial crisis, the works for verification for its validity are needed by case studies in depth. If this paper is supplemented and its validity is proved by case studies, it would contribute to the crisis management of a company and the national economy. Then, it is expected to be helped to achieve remarkable performances for a company and for the national economy. The more case studies, the better would be.

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