National debt ratio, and

Economic growth and crisis

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Ⅰ. Introduction

Recently, finance crisis from EURO has become a new problem. Greece, as well as Portugal, Spain, third has a similar problem that it became known and the wavelength is not expected to be easily disappearing. With regard to this case, the government debt ratio each country has attracted attention again. Greece’s excessive use of debt in relation to their national GDP make a loan repayment of the principal and interest pressure that provoked economic crisis. Accordingly, the entire world has same belief to reduce and manage their debt.

Today thanks to the remarkable growth of finance and communication, the movement of resources each country has become more easily and its size is also growing rapidly. They were difficult to maintain the closed economic policy for activities in the modern economic. And capital liberalization is being seen as an essential element for becoming the center of the world economy.

The increasing in the size of the movement of capital in countries has raised the issue about foreign currency asset and debt. It is that foreign debt offer the new economic growth opportunities by attracting more capital that is lack and cause problem like finance crisis owing to economic insecurity. Thus the evaluation of the debt seems to have the opposite opinion. So which story is reasonable?

The interesting thing is that Dubai and Iceland are the prime example mentioned with foreign debt as opportunity for economic growth could provoke a crisis. Both countries to overcome the environmental vulnerability and develop new growth engine have so much debt. They acclaimed enough to be called a miracle growth. And they represented the nations suffered the biggest blow through the recent financial crisis.

The company with a debt can be viewed like the country with it. The story involved companies told that the debt is the biggest cause about the growth opportunities and crisis. So many efforts to find the optimal debt ratio.

If so, how much of debt of a country is appropriate? How size of debt is good to make the result of the sum of benefits and cost? What attitude do we have about the debt? In this paper, we obtain the answers about that.

Body

Ⅱ. Growth and crisis case study related national debt.

1. Growth

Foreign capital generates positive effects to the country that have a growth opportunity but lack of capital. There are to increase GDP growth and strengthen growth potential of based national economy through SOC investment. Thus, by judicious use of foreign capital made countries achieve rapid growth and prime examples of Iceland and Dubai can be.

(1) Iceland

Iceland is a country that has environmental disadvantages for growth. The area is similar with South Korea and the population is only 310,000 people. In addition, the tundra is the most substantial of the country where we can live with is limited. It is hard to develop its industry in Iceland, so most of those are the fishing.

Iceland welcomed this era of growth since 1992. Former Prime Minister, David, carried out the widespread economy reform. There is Daecheorijeum • Neoliberalism • Deregulation. They liberalize the foreign investment and it makes huge amounts of capital in nation. Foreign capital supported Finance • Technology industry • Pharmaceuticals and this is Iceland, the Nordic financial powerhouse. Iceland has the financial record that assets of its three big banks increase 30 billion to 1,400 billion in the shortest period and it is amazing financial expansion. Also at that time, the nation is a per capital income $60,000, 4th happiest country, 7th national competiveness. So many countries of the world will be located in a country wannabe. Then people support to Neoliberalism use this for proof.

(2) Dubai

Dubai is one of countries that make up the seven emirates in United Arab Emirates. The nation had developed by international trade port and land transit trade is only one among them. Dubai was oil producer since 1969 but the king Muhammed believed that the economy relied on oil export will hit a limit. So he tried to change its economy to the middle of Trade • Finance • Tourism hub.

Dubai taked the method that attracted foreign capital and manpower for development. For foreign companies, which get rid of even the least regulated policies were radical. And Free Trade Zone in Dubai for foreign has been determined. This registered business is allowed 100% foreign ownership and is exempt from taxes and tariff. In addition, there is no limit of recruitment and sponsorship of activities. Dubai has got so based on foreign capital and labor to develop the tourist part of which 3.6 million people in 2001 had the records a tourist in 2002, 4.75 million people in 2003 to 4.98 million people. It was increasing, so in 2009 close to 1,000 tourists. The tourism industry in the entire industry, which occupies 33% of GDP as against 6 percent GDP for the oil industry, the share of the tourism

industry is very high. The size of Dubai's economy is 37 billion U.S. dollars but their populations are just 830,000 people. Also in the first half of the 2000s, they had recorded annual average growth rate of nearly 16% of growth, and 9.7 percent growth rate in 2007. Except crude oil, they had only thing that just vast. Stunning developments to date and innovative ideas to the high economic growth in Dubai, so many countries and cities in the world has taked a benchmark case.

2. Crisis

If a country's national debt compared to GDP or revenue become huge, the pressure and burden are so strong casing the interest and principal payments. The volatility of a country's economy result from foreign debt makes their base vulnerable. Recently, the rapid decline of many countries occurred due to the financial crisis, this shows the serious consequences of an adverse reaction. And famous places of Iceland, Dubai

(1) Iceland

Iceland enjoyed the golden age of 15 years before the financial crisis. Financial crisis occurs while the country suffered the first blow was Iceland. Iceland is not based on the real economy but sub-real economy, and they had developed financial sector abnormally. As a result, most of the bank's total assets consist of foreign debt that was 10 times for the country's GDP. When the crisis occurred, they had the majority suffered about exodus of capital and plummeting value of its currency. Lending money was insolvency and the scale of money they borrowed rapidly increase. As a result, Iceland became a great debtor nation cannot control themselves bankrupt and now they have the highest rate of immigration. Many scholars criticized limits of the non-real economy.

(2) Dubai

The economy of Dubai was also attacked by international economic crisis. Huge construction projects were financed by a lot of central banks but because of international economic crisis from America, raisings like these largely decreased. While economy of real estate fell down by 50% in asset values, foreign investors withdrew their money. Huge construction projects were struck due to this withdrawal. Trade, touring, finance which were main industries of Dubai were damaged by international crisis.

A rate of economic growth of Dubai which was very high remained only 2%. Since foreign workers who formed more than 80% of population of Dubai flowed out, population of Dubai reduced by 8% only in one year. This outflow resulted in decrease of demand in consumption and real estate. Finally Dubai World, which is managed under government operation, requested Moratorium in 2009.

We can say that excessive investment and development in a short period and excessive reliance on foreign capital resulted in economic crisis of Dubai. In fact, Dubai was able to develop rapidly in a

new millennium but recently some projects failed to get profits as invested. In these circumstances, Dubai which has weaker infrastructure and the manufacturing industry, was liable to be vulnerable to depression like this economic crisis

Ⅲ. Two sidedness of national debt

As we can see by examples former, national debt not only gives opportunities for a country to develop but also raises instability of economy in the same time. Let we begin to look at specifically pros and cons of using national debt

Positive effect
Raising short term growth rate of GDP by expenditure of government
Increase of national debt can easily and quickly result in increase of total demand of whole economy, Especially, when in a economic crisis that lacked private demands, a national debt is often used to overcome this. In reality a lot of countries increased public expenditure largely to overcome their crisis through financing the home and foreign capitals needed.

Way to overcome liquidity crisis
A national debt has a role that finances the money to home in liquidity crisis, allocating resources appropriately. It is easy for a country to finance money because a country is less risky than a person. When financed an abundant flow of capital to a country, a country can develop more smoothly.

Securing future growth engine through investment to SOC
It is needed for the least undeveloped country to realize economic growth. But the developing countries like these are not likely to obtain a lot of money. So investment through national debt not only makes a new growth engine but also gives fundamental for economy development. Namely, it is a virtuous cycle of economy

Distribution to the economic market through free flow of capital
Issuing public debt, forming a large part of national debt, enables foreign capital to freely flow into countries as well as enlarges the size of bond market. Thanks to this debt, it becomes possible that economy of a country grows up and becomes effective.

Negative effect

Establishing a long private investment, suppressing a growth of GDP

Increase of national debt may make it difficult to get financed by the private because it rises up the interest rates in long term. This artificial increase of national debt brings autonomy of economy down, lowering endogenous abilities of economy.

Drop in sovereign credit rating (country risk) and outflow of foreign capital

Increase of national debt causes country risk to skyrocket, raising the possibility of a national bankruptcy. It not only raises CDS premium of national debt but also helps foreign capitals to flow out. In addition, it may lead to chaos in economy because of rapid outflow of foreign capitals.

Pressure of repaying the principal and interest

Debts raise the pressure of interest directly. Unless national revenue grows rapidly, there will be a vicious cycle that increase of interest makes another debt increase, bringing increase of interest once more. Eventually, it is certain that pressure of debt that is connected to pressure of national economy is obvious cost.

Ⅳ. Discussion: Appropriate National Debt

Notion of reasonable national GDP to debt ratio

Reasonable national GDP to debt ratio is percentage of debt that maximizes economic utility of the whole country in cases that there are government debts as far as those can be paid off. As mentioned in earlier section, national debt has both strong points, such as (******), and weaknesses, such as (******). For these reason, it is not necessarily right to run the state with way to lower debt ratio blindly. Thus, we have to consider pros and cons of having national debts and find the ratio that maximizes economic utility of the state when we think about the appropriate debt ratio.

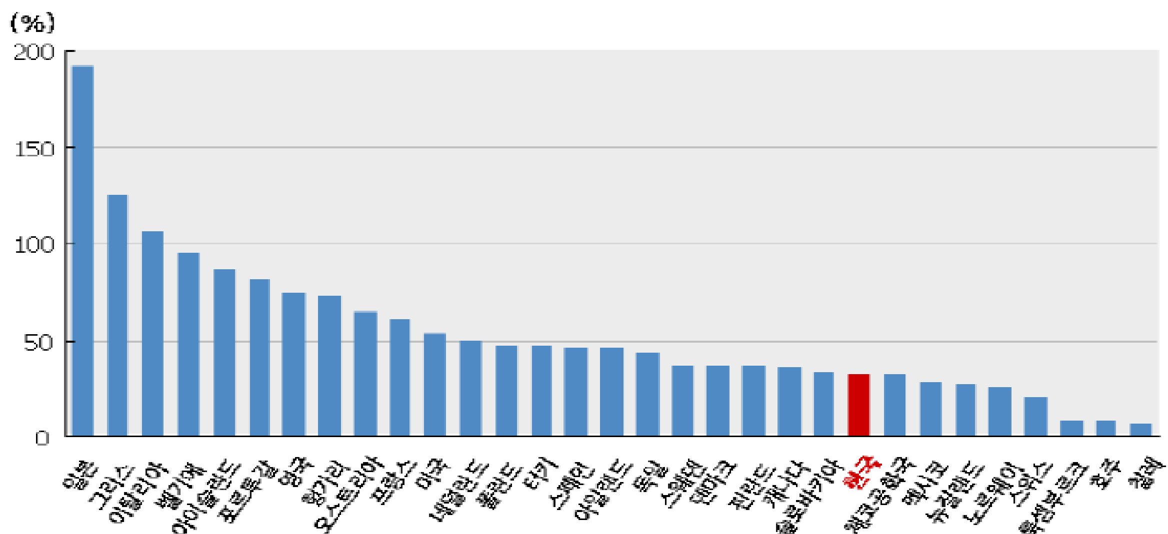
Debt ratios of many countries

Debt ratios of many countries of the world are different from state to state. There are countries that debt ratio increased by economic crisis. On the other hand, there are countries that keep the ratio stable regardless of economic crisis as well. Debt ratios of many countries are represented in Figure 1

Chile(6.1%), Australia(8.1%), and Luxemburg(8.6%) are the states whose debt ratios are small. Their debt ratios are less than 10% and this percentage indicates they have low debt ratios among the countries of OECD. Unlike these countries, Japan(192.9%), Greek(125.7%), and Italy(104%) have high debt ratios. Debt ratio of South Korea is 32.6%, which is less than average of OECD-member countries(53.8%).

As we can see through figure1, it is not always the states with possibility of economic crisis if they have big debt ratios. Similarly, It is not always the states with low growth rate when they if they have small debt ratios as well. Actually, Greek and Italy are going through financial crisis recently, but their debt ratios are low than Japan which is not undergoing one. In addition, Chile, which has extremely low debt ratio, is expected to grow to 5.2%, and this rate is higher than average expected growth rate of OECD-member countries. That is, there is no reasonable debt ratio that applies to all countries around the world. Debt ratio cannot be found until we consider the national qualities.

<Figure 1>



자료: SourceOECD, Statistics.

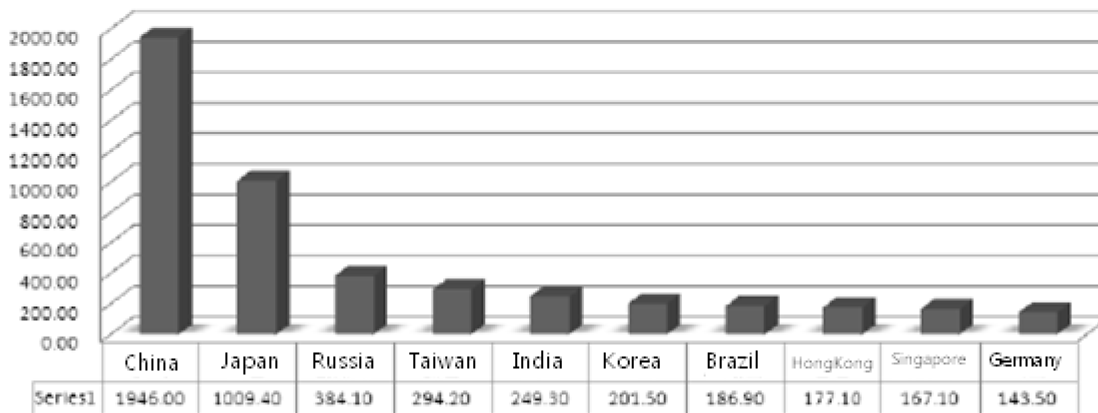
Determinants that affect reasonable national debt ratio

As stated, debt ratios are different from country to country and so are appropriate ratios that the country has to sustain. This is because factor involved in economic growth and crisis is not only national debt ratio. In addition to debt ratio, foreign exchange holdings, long-term and short-term foreign debt ratio, and the economic quality of that country should be considered.

Foreign exchange holdings

Foreign exchange holdings mean amount of foreign currency bonds that country holds at some period and it include not only dollars and yen bonds but also gold. Cause of financial crisis in 1997 is failure to secure the foreign exchange reserves. Figure2 represents the size of foreign exchange reserves in many countries.

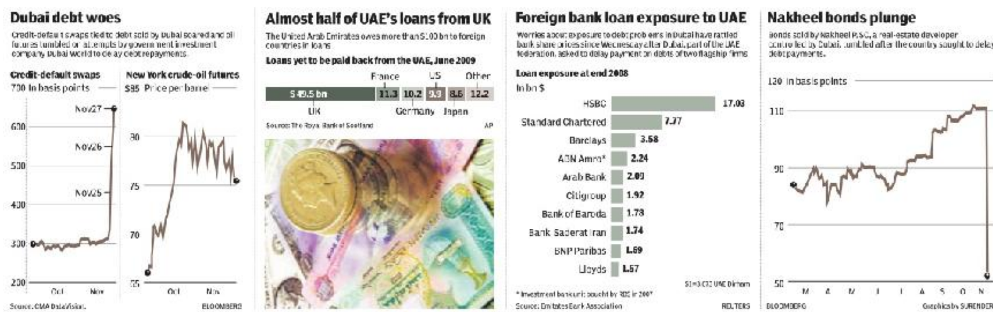
If the country has small size of foreign exchange reserves, it may not be able to pay off short-term foreign debt and it will be confronted with economic crisis. Generally, because foreign currency the country has should be more than one the country must pay off, foreign exchange holdings needed are forced to be larger than sum of short-term foreign debt and current income. In other words, it is required to keep the amount of short-term foreign debt smaller than foreign exchange holdings that cut current income off.



<Figure 2> Foreign exchange reserves of many countries

Long-term & Short-term foreign debt ratio

Another factor causing the economic crisis is long and short term foreign debt ratio. Moratorium, which means the state of being not able to pay off, can be declared because of large amount of national debt at that moment. But more exactly speaking, Moratorium is attributed to short-term foreign debt ratio that was not paid off. That is, even if the size of national debt is small, the country may get to the point where Moratorium is necessary if it’s size of short-term foreign debt that should be paid off at that moment. Dubai, for instance, declared Moratorium in 2009.



Quality of Economy

Even if some two countries have same foreign debt ratio, foreign exchange reserves and long and short term foreign debt ratio, they can be exposed to the different economic conditions. Depending on the quality of the country, blow that the country will get can vary.

Iceland may be the one of good examples. In Iceland, whole assets of financial institutions were ten times as much as gross product of the country. Also, it developed economic circumstance based on finance, and did not promote heavy industry. As a result, Iceland could not get over the global financial crisis that started out from U.S. and faced it.

This case of Iceland indicates that even though any other conditions are same, many countries can encounter the economic crisis or not because characteristics of many countries around the world are different.

Others

In addition to foreign exchange holdings, long and short term foreign debt ratio and quality of economy, there are many other determinants that affect economic crisis or growth. Size of the economy, dependence of foreign countries, geographical position and exchange rate are some of those determinants. For instance, if one country depends on other countries too much, possibility that country experiences economic crisis is more likely to increase.

These factors are important but it is not easy to analyze quantitatively. Also, it becomes too complex to find out appropriate debt ratio when we take account of these determinants all. So, in this article, we didn't consider these factors where we find the rate.

Indexes to figure economic crisis and growth out

To analyze economic crisis and growth of the country, we have to check the indexes that indicate economic conditions at some point. If we want to see the growth, we can use GDP of the country. Similarly, if we want to know about the crisis, we can use CDS premium of the country. Figure3 and 4 show GDP growth rate and CDS index. CDS (Credit Default Swap) is credit derivatives made to buy and sell default risk. CDS premium means cost for bonds denominated in foreign currency issued in foreign countries. So the higher CDS premium is, the riskier economy of the country is.

<Figure 3>

Country Default Risk As Measured By CDS Prices*

Country	Current	5/7/10	12/31/2009	Start of 2008	% Chg YTD to 5/7	% Chg Since 5/7
Portugal	229.8	460.2	91.7	17.7	402.1	-50.1
Greece	533.0	938.7	283.4	22.1	231.3	-43.2
Italy	145.3	229.6	109.2	20.3	110.2	-36.7
Spain	165.6	251.2	113.5	18.2	121.3	-34.1
Ireland	179.2	263.0	158.0	-	66.5	-31.9
Slovakia	73.6	101.1	79.3	18.2	27.6	-27.2
Australia	41.3	54.1	40.2	-	34.7	-23.8
Poland	132.1	173.0	132.2	26.3	30.8	-23.7
Russia	166.8	216.9	184.6	87.5	17.5	-23.1
France	60.1	77.9	32.1	9.7	143.1	-22.9
South Korea	101.3	129.8	85.5	46.5	51.9	-22.0
Iceland	271.0	342.7	411.9	64.7	-16.8	-20.9
Kazakhstan	192.3	242.4	222.1	201.8	9.2	-20.7
South Africa	153.0	191.6	143.3	78.3	33.7	-20.1
Turkey	177.0	220.6	182.8	166.5	20.6	-19.7
Germany	46.2	57.3	26.3	6.9	117.6	-19.4
Bulgaria	239.0	293.9	229.6	78.6	28.0	-18.7
Philippines	168.9	203.8	167.6	153.0	21.6	-17.2
Malaysia	90.9	109.5	89.6	43.5	22.2	-17.0
Mexico	125.7	151.0	133.3	70.0	13.3	-16.8
Austria	71.2	85.3	84.0	8.1	1.6	-16.6
China	72.2	86.1	73.4	-	17.3	-16.1
Peru	126.4	150.7	123.6	115.7	21.9	-16.1
Brazil	127.4	151.7	122.6	103.0	23.8	-16.0
Belgium	88.7	105.5	53.9	10.6	95.9	-15.9
Indonesia	178.0	211.6	188.0	153.5	12.5	-15.9
Colombia	152.9	180.6	142.8	130.0	26.5	-15.4
UK	85.1	99.8	82.5	8.9	20.9	-14.7
Thailand	120.1	138.4	96.3	55.0	43.7	-13.2
Chile	87.0	98.6	69.3	30.1	42.3	-11.8
Japan	80.1	89.4	68.1	8.5	31.2	-10.4
Argentina	921.1	1025.1	915.9	460.7	11.9	-10.1
Egypt	188.6	209.2	249.5	101.6	-16.2	-9.8
USA	39.2	42.6	37.6	8.0	13.3	-8.1
Vietnam	252.0	270.9	231.1	126.2	17.2	-7.0
Dubai	444.3	464.8	447.0	-	4.0	-4.4
Lebanon	313.9	327.8	274.8	333.3	19.3	-4.2
Israel	117.8	122.8	124.5	33.5	-1.4	-4.1
Venezuela	1023.0	1050.3	1107.0	451.5	-5.1	-2.6

<Figure 4>

	2006	2007	2008년 4월 전망치		2008년 1월 전망치와의 차이	
			2008	2009	2008	2009
World output	**5.0**	**4.9**	**3.7**	**3.8**	**–0.5**	**–0.6**
Advanced economies	3.0	2.7	1.3	1.3	–0.6	–0.8
United States	2.9	2.2	0.5	0.6	–1.0	–1.2
Euro area	2.8	2.6	1.4	1.2	–0.2	–0.7
Germany	2.9	2.5	1.4	1.0	–0.1	–0.7
France	2.0	1.9	1.4	1.2	–0.1	–1.0
Italy	1.8	1.5	0.3	0.3	–0.5	–0.7
Spain	3.9	3.8	1.8	1.7	–0.6	–0.8
Japan	2.4	2.1	1.4	1.5	–0.1	–0.2
United Kingdom	2.9	3.1	1.6	1.6	–0.2	–0.8
Canada	2.8	2.7	1.3	1.9	–0.5	–0.5
Other advanced economies	4.5	4.6	3.3	3.4	–0.4	–0.4
Newly industrialized Asian economies	5.6	5.6	4.0	4.4	–0.4	–0.4
Emerging and developing economies	7.8	7.9	6.7	6.6	–0.2	–0.4
Africa	5.9	6.2	6.3	6.4	–0.7	–0.2
Sub-Sahara	6.4	6.8	6.6	6.7	–0.3	–0.2
Central and eastern Europe	6.6	5.8	4.4	4.3	–0.2	–0.8
Commonwealth of Independent States	8.2	8.5	7.0	6.5	—	–0.1
Russia	7.4	8.1	6.8	6.3	0.2	–0.2
Excluding Russia	10.1	9.6	7.4	7.0	–0.6	0.2
Developing Asia	9.6	9.7	8.2	8.4	–0.4	–0.4
China	11.1	11.4	9.3	9.5	–0.7	–0.5
India	9.7	9.2	7.9	8.0	–0.5	–0.2
ASEAN-5	5.7	6.3	5.8	6.0	–0.2	–0.2
Middle East	5.8	5.8	6.1	6.1	0.2	0.1
Western Hemisphere	5.5	5.6	4.4	3.6	0.1	–0.4
Brazil	3.8	5.4	4.8	3.7	0.3	–0.3
Mexico	4.8	3.3	2.0	2.3	–0.6	–0.7

* IMF, <World Economic Outlook>,2008.4.9

Relationship between debt ratio and economic growth and economic crisis

As we Seen, if other conditions are the same, economic growth is in proportion to debt ratio and economic crisis is also in proportion to the debt ratio. If debt ratio is higher, economic growth is higher but economic crisis is also higher. Then, in economic growth point of view, the higher the debt ratio, the better. We only analyze relationship between economic crisis and debt ratio and find maximum available debt ratio. The maximum available debt ratio is the appropriate debt ratio.

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Relationship between debt ratio and economic crisis

Although we analyze only relationship between debt ratio and economic crisis, In this case, other conditions may cause changes of economic crisis, for finding the appropriate debt ratio, we use other conditions such as short term debt ratio, imports, foreign exchange reserves. We face one problem that we can't measure accuracy economic crisis. We attempt to use cds for measurement of crisis, but it

isn't adopted. For example, in global economic crisis, cds premium increase after facing Euro economic crisis. Then it can't play a role leading indicator. We analyze more basically. Economic crisis is that country can't pay back its debt on time. This mean country have more debt that will be paid back than reserves. It is represented foreign exchange reserves < short term debt ratio. But actually, foreign exchange reserves > short term debt ratio doesn't satisfy that country isn't faced economic crisis. We consider imports too. Current account deficit affect ability to pay back. General use standard by IMF. In this standard. Foreign exchange is higher than 1/4 imports.

Then

Foreign exchange reserves - 1/4 imports < short term debt may generate economic crisis. Contrary, we maintain

Foreign exchange reserves - 1/4 imports > short term debt avoiding economic crisis.

Because of debt ratio, we transform this equation,

Foreign exchange reserves - 1/4 imports < short term debt ratio * debt

(Foreign exchange reserves - 1/4 imports)/GDP < short term debt ratio * debt/GDP = short term debt ratio * debt ratio

Finally we obtain this equation.

(Foreign exchange reserves - 1/4 imports)/GDP/short term debt ratio < debt ratio.

Therefore debt ratio is lower than (foreign exchange reserves - 1/4 imports)/GDP/short term debt ratio.

Now we look historical data.

Verification by Historical Data

<Figure5>

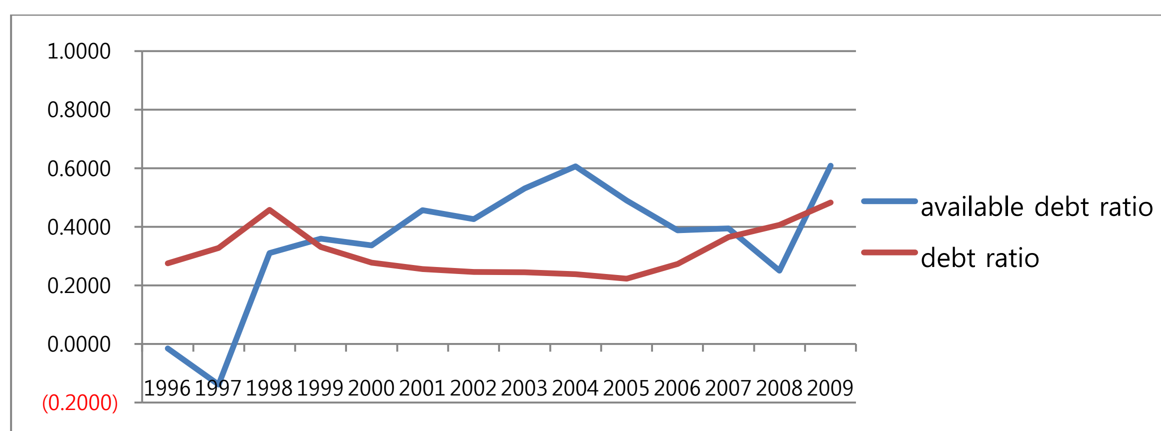

Figure5 show relationship ratio and ((Foreign exchange reserves ? 1/4 imports)/ GDP)/ Short term debt ratio. We call ((Foreign exchange reserves ? 1/4 imports)/ GDP)/ Short term debt ratio maximum available debt ratio. In this Figure5, Real debt ratio is higher than maximum available debt

ratio in financial crisis (1996, 1997) and Global Economic crisis (2008). However real debt ratio lowers than maximum available debt ratio in other years. Then we reveal that the relationship between real debt ratio and maximum available debt ratio represent economic crisis by historical data.

Result

We should keep Debt ratio lower than maximum available debt ratio. Now maximum available debt ratio is 60.85% and debt ratio is 48.25% then debt ratio is appropriate.

Ⅴ. Conclusion

We have discussed growth and crisis cases related to national debt, two sidedness of national debt, and finally searched for an appropriate national debt ratio for economic growth, not crisis. Actually national debt can become a great weapon of power to developing country for economic growth. But we have to be cautious about this debt because it has always riskiness especially when in global economic crisis. As you saw, Iceland and Dubai were able to raise their economy surprisingly thanks to national debt. They both had focused on one industry (fishing and oil patch) but these were not promising and only limited to proceed to economic growth. National debt was definitely a critical role of their growth. But too much national debt of the countries was a big concern while global economic crisis and further more it was mainly responsible for their rapid economic decline. When we see that Iceland, Dubai, Greece is all in economic trouble now, surely national debt is “a two-edged sword”. Because national debt has a positive effect and negative effect at the same time, an important question is left. “To use meaningfully national debt, how much debt do we have to possess?” In other words, most important matter is appropriate debt ratio. And we conclude that appropriate fixed, definite ratio for maximizing utility of economy does not exist. Certainly excessive national debt is related to economic crisis, but all the countries around the world have all different economic circumstances each other, so we cannot conclude a fixed ratio. But, a sole fact we have to keep in mind is that if national debt start to increase, it will be very difficult to reduce the debt ratio. So, continuous attention to manage national debt is needed.