Influential Factors and Empirical Research on Debt Cooperation Between China and Mongolia

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Abstract:- Last 10 years Mongolian Government and Central banks borrowed a huge amount of money from China. I want to study about influential factors and empirical research on debt cooperation between China and Mongolia. Because Mongolian external debt is increasing by every year, we are facing problems that a huge amount of money back pay. Today Mongolia's loans borrowing from Republic of China equals 33 percent of GDP. China is the most important investing country for Mongolia. For this reason, this topic is much interesting to me. My purposes of this research is to define the influential factors on debt cooperation between China and Mongolia. I have achieved purposes of my thesis, I used OLS regression method. I also built two model on this paper. In open economy, defining Mongolian foreign loan is based on simple model (Financial depth, GDP and others). It involved hypothesis that Mongolian loan has impact on these variables in the short term. Hence, linear expressions of variables are able to measure the impacts of Mongolian foreign loan. In the first model, dependent variable is debt that Government of Mongolia and Central bank borrowed from China. In Second model, dependent variable is debt that Commercial bank of Mongolia borrowed from China.

The equation results, the change in volume of debt that Government of Mongolia and Central bank borrowed from China is depending on the following variables such as Mongolia's and China's GDP growth, Mongolia's and China's financial depth, the M2 money-to GDP ratio, and net export. The change in volume of debt that Commercial bank and other sector's borrowed from China is depending on the following variables such as China's GDP growth, Mongolia's and China's financial depth, the M2 money-to GDP ratio, and net export.

Keywords:- GDP; Debt; Mongolia; M2; Financial Depth.

I. INTRODUCTION

In recent years, China and Mongolia has witnessed rapid development in political, mutual trust, economic and trade cooperation and people-to-people exchanges. China is Mongolia's largest trading partner and a major investor in the country for last years. In 2014, the two countries established a comprehensive strategic partnership, a more advanced form of bilateral relationship China holds with another country.

Mongolia is increasingly involved in the realization of the new Silk Roads. One of the corridors of this initiative linking China to Russia is passing though Mongolia. The Belt and Road initiative aims to improve transport and communication infrastructure between China and Mongolia. But this cooperation also includes other sectors. China is now the largest investor and trading partner of Mongolia and since 2014 the two countries are bound by a strategic partnership.

A. Aim of the research
Define the influential factors on debt cooperation between China and Mongolia.

B. Purposes of the research paper
- Research on current situation between China and Mongolia's debt cooperation
- An analysis of the factors influencing the debt cooperation between China and Mongolia
- The empirical and trend analysis of debt cooperation between China and Mongolia

II. PREPARE YOUR PAPER BEFORE STYLING

The amount of a country's external debt has indirect and direct impact on the economy. Specifically, increasing the external debt leads to increase the inflation rate and unemployment rate, decrease saving, affect the monetary policy, as well as is likely to threaten the country's economy and independence. In case the proper amount of external debt exceeds the limit, the macro indicators drop dramatically, the sustainability of society will be lost, or political situation will get worsen.

A. Units
- GCB Mongolian Government and Central bank /usd.thousand/ borrowed money from China
- CBO Mongolian Commercial bank and other /usd.thousand/ sector's organization borrowed money from China
- CGDP   GDP of China /yuan.million/
- MGDP   GDP of Mongolia /mnt.million/
- M2M   M2 of China/Yuan/
- M2C M2 of Mongolia MNT.Billion
- INV Investment from China to Mongolia /USD.million/
- EXP Mongolia export to China /usd.million/
- IMP Mongolia import from China/usd.million/
- M2MY   M2/GDP of Mongolia
- M2CY   M2/GDP of China

B. Equations

In open economy, defining Mongolian foreign loan is based on simple model (Financial depth, GDP and others). It involved hypothesis that Mongolian loan has impact on these variables in the short term. Hence, linear expressions of variables are able to measure the impacts of Mongolian foreign loan. I will use the below function on my thesis. More realistic in economics to assume an economic variable is function of number if different factors:

Also I calculated two model: In first model, dependent variable is debt that Government of Mongolia and Central bank borrowed from China. In Second model, dependent variable is debt that Commercial bank of Mongolia borrowed from China.

$$Y^1_{ijt} = \alpha GDP_{it} - \beta GDP_{jt} + \chi M2Y_{it} - \delta M2Y_{jt} + \phi INV_{jt} + \text{other variables} + \varepsilon > 0 \quad (1)$$

In here: y^1_{ijt} – on t time, GCB (Mongolian Government and Central bank's loan from China)

GDP_{jt} – on t time, GDP of Mongolia

GDP_{jt} – on t time, GDP of China

INV_{jt} – on t time, Invest from China to Mongolia

$M2Y_{jt}$ – on t time, Economic cycle of Mongolia

$M2Y_{it}$ – on t time, Economic cycle of China

ε - stochastic error

The quantities of α, β and γ represent the relative impact on foreign loan for GDP, Economic cycle and invest from China to Mongolia. The stability of variables was checked by unit root, and the causality was examined by Granger causality test.

$$Y^2_{ijt} = \alpha GDP_{it} - \beta GDP_{jt} + \chi M2Y_{it} - \delta M2Y_{jt} + \phi INV_{jt} + \text{other variables} + \varepsilon > 0 \quad (2)$$

In here: y^2_{ijt} - on t time, CBO (Mongolian Commercial bank and other /usd.thousand/ sector's organization borrowed money from China)

GDP_{jt} – on t time, GDP of Mongolia

GDP_{jt} – on t time, GDP of China

INV_{jt} – on t time, Invest from China to Mongolia

$M2Y_{jt}$ – on t time, Economic cycle of Mongolia

$M2Y_{it}$ – on t time, Economic cycle of China

ε - stochastic error

C. Research Methodology

This analysis samples data running from 1st quarter of 2010 to 4th quarter of 2018. Mongolian Government and Central bank /usd.thousand/ borrowed money from China, Mongolian Commercial bank and other /usd.thousand/ sector's organization borrowed money from China, GDP of Mongolia /mnt.million/, M2 of Mongolia MNT.Billion, Investment from China to Mongolia /USD.million/, Mongolia export to China /usd.million/, Mongolia import from China/usd.million/, M2/GDP of Mongolia, M2/GDP of China, Trade balance of Mongolia index were taken from National Statistical office and Monthly Statistical bulletin of Mongolian Central bank, then the source of all data relative to GDP of China /yuan.million/, M2 of China/Yuan/ were from Federal Reserve Statistics respectively.

III. EMPIRICAL RESEARCH

It was intended to explain the Mongolian foreign loan (from China) and the impact on the economic cycles through the estimation methods in econometrics. In order to remove the effects of seasonal fluctuations in GDP data, the data were adjusted for seasonal effects by using the Gensus X13-ARIMA and some factors were adjusted by the Hodrick Prescott Filter. For other variables, the seasonal adjustments were not made, and ordinary least squares in EViews 10.0 program was used to estimate linear regression model.

A. The dependence of Government and Central bank's loan and explanatory variables

As showed in the equation results, the change in volume of debt that Government of Mongolia and Central bank borrowed from China is depending on the following variables such as Mongolia's and China's GDP growth, Mongolia's and China's financial depth, the M2 money-to GDP ratio, and net export.

Variable	Dependent Variable: GCB		
	Coefficient	Std. Error	Prob.
C	0.833	0.224	0.002***
GCB(-1)	0.876	0.038	0.000***
D(MGDP(-1))	-1.127	0.357	0.006***
D(CGDP(-2))	1.858	0.973	0.0743*
D(M2MY(-2))	-0.077	0.029	0.017**
D(M2CY)	-0.104	0.038	0.014**
D(NX(-1))	0.200	0.083	0.028**
INV	0.012	0.016	0.4656
@TREND	-0.002	0.001	0.1054

Remark: ***), (**), (*) indicate that the hypothesis of "no effect" is rejected at the 1%, 5%, 10% significant level respectively. Revealed that other variables except for INV are have significant effect on GCB.
$R^2 = 93.2$; *Durbin Watson = 1.97; SER = 0.022*

Table 1:- The dependence of Government and Central bank's loan and explanatory variables
Source: estimated by research

Specifically: It showed that Mongolia's real GDP growth declines the volume of debt central bank and government took out by 1.13 percent after 1 quarter since the base quarter, but China's GDP growth increases the volume after 2 quarters since the base quarter by 1.86 percent.

Increasing Mongolia's and China's financial depth decreases the volume of debt of the government and Central bank after 0 and 2 quarters since the base quarter by 0.08 and 0.1 unit. Increasing China investment in Mongolia and net export leads to grow the volume of debt of the government and Central bank after 0 and 1 quarter since the base year. /China investment in Mongolia was not statistically significant/

If Mongolia's GDP increases, Mongolia's debt to China will reduce. It demonstrated that if Mongolia can spend the loans on efficient projects, we will have financial capacity to pay off the debt. As China real GDP grows, Mongolia's debt to China will increase. The more China economy grows, the more money China will lend to other countries.

Financial depth is considered as good sign for developing country. In other word, financial depth drives sustainable economic growth. In contrast, in developing countries too much financial depth has negative impact on economy through financial crisis. Economists considered that the impact of financial depth on economy is positive in short term and negative in long term. Occurring financial depth in Mongolia is decreasing the debt of government and central bank after 2 quarters.

Financial sector development improves credit worthiness. In other words, it means that if Mongolia use wisely own resource and potentials, we aren't required to take out any loan from other countries or there is a chance to pay off the debt in short time. Increasing financial depth for China involves China financial sector development, then the results showed it decrease the debt in Mongolia. It means that instead of lending the money to other countries, China spends the money on developing domestic financial sector. Increasing the amount of China investment in Mongolia leads to increase the amount of Mongolia external debt.

Mongolia economy is highly dependent on Chinese economy. There are two options for policy of the country's economic development: support export-oriented manufacturing or import replacement. Some countries implement both options, or choose one of them.

Thus, the loans for supporting small and medium-sized enterprises are financing the business. As Mongolia take out large amount of loans from neighboring countries, it causes to increase the export products.

There are many instances of financial crises due to improper use of external debt. For example, Netherland's case. As seen the result of analysis, the debt of Mongolian government and central bank to china is not significant for China investment in Mongolia. It involves the fact that investment and debt are separate perceptions.

Also, the loans from China can be converted investment through commercial banks. Investment may not affect liabilities. Investment can be through intermediary, capital market, and financial market, or reach end users through the form of foreign direct investment. Central bank and Government are only responsible for regulating.

B. The dependence of Government and Central bank's loan and explanatory variables

As showed in the equation results, the change in volume of debt that Commercial bank and other sector's borrowed from China is depending on the following variables such as China's GDP growth, Mongolia's and China's financial depth, the M2 money-to GDP ratio, and net export.

Specifically: It showed that Chinese real GDP growth declines the volume of debt commercial bank and other sectors took out by 2.513 percent after 1 quarter since the base quarter. China's financial depth increases the volume of debt of the commercial bank the base quarter by 0.12 unit.

Variable	Dependent Variable: GCB		
	Coefficient	*Std. Error*	*Prob.*
C	0.057	0.022	0.0187**
D(CGDP(-1))	-2.513	0.755	0.0043***
INV(-2)	-0.028	0.012	0.0275**
D(M2CY)	0.12	0.027	0.0003***
D(M2MY)	-0.074	0.015	0.0002***
D(M2MY(-1))	-0.06	0.015	0.0008***
D(M2MY(-2))	0.098	0.022	0.0004***
D(NX)	0.162	0.059	0.0137**
D(NX(-1))	0.192	0.059	0.0053***
Remark: ***), (**), (*) indicate that the hypothesis of "no effect" is rejected at the 1%, 5%, 10% significant level respectively. Revealed that other variables except for INV are have significant effect on GCB. R^2=85.2; *Durbin Watson = 1.99; SER=0.03*			

Table 2:- The dependence of Government and Central bank's loan and explanatory variables
Source: estimated by research

Increasing net export leads to grow the volume of debt of Mongolian commercial bank after 0 and 1 quarter since the base year by 0.162 and 0.192. China investment in Mongolia is decreasing the volume of debt of the Mongolian commercial bank after 2 quarter since the base year by 0.028.

IV. CONCLUSION

Today Mongolia's loans borrowing from Republic of China equals 33 percent of GDP. Although the proper amount of external debt varies widely across countries, majority of the countries have legalized that the limit doesn't exceed 50 percent of GDP. Specifically, for Belarus the external debt must equal 25 percent of GDP, and internal debt must equal 20 percent of GDP. Mongolia adopted the fiscal stability law in 2010 and specified "the remaining balance expressed by present value of the state debt shall not exceed 40 percent of GDP that calculated by the year price". It is a proper amount of external adjusting to world standards and called as the debt ceiling. In some cases, the debt ceiling has negative impact on the economy. Much money is required to implement macro projects such as infrastructure, railway, and industrial park etc. Increasing money supply and the supply of foreign currency may affect negatively the

economy such as create economic growth, decrease the interest rate, increase the employment and depreciate the exchange rate etc. But the fact whether it has positive impacts depends on government policy, benefits of projects, and the control on the implementation of projects.

However, the loans and interest rates are paid off semi-annually by currency and the certain amount of foreign currency will be disbursed and the supply will decrease. Decreasing the supply of currency is likely to depreciate the exchange rate of tugrug. If depreciating the exchange rate dramatically, it may create financial crisis.

The change in volume of debt that Government of Mongolia and Central bank borrowed from China is depending on the following variables such as Mongolia's and China's GDP growth, Mongolia and China financial depth, the M2 money-to GDP ratio, and net export. It showed that Mongolia real GDP growth declines the volume of debt central bank and government took out by 1.13 percent after 1 quarter since the base quarter, but China GDP growth increases the volume after 2 quarters since the base quarter by 1.86 percent.

Increasing Mongolia's and China's financial depth decreases the volume of debt of the government and Central bank after 0 and 2 quarters since the base quarter by 0.08 and 0.1 unit.

Increasing China investment in Mongolia and net export leads to grow the volume of debt of the government and Central bank after 0 and 1 quarter since the base year. /China investment in Mongolia was not statistically significant/. Increasing net export leads to grow the volume of debt of Mongolian commercial bank after 0 and 1 quarter since the base year by 0.162 and 0.192. China investment in Mongolia is decreasing the volume of debt of the Mongolian commercial bank after 2 quarter since the base year by 0.028.

If Mongolia GDP increases, Mongolia's debt to China will reduce. It demonstrated that if Mongolia can spend the loans on efficient projects, we will have financial capacity to pay off the debt. As China real GDP grows, Mongolia's debt to China will increase. The more China economy grows, the more money China will lend to other countries.

Financial sector development improves credit worthiness. In other words, it means that if Mongolia use wisely own resource and potentials, we aren't required to take out any loan from other countries or there is a chance to pay off the debt in short time. Increasing financial depth for China involves China financial sector development, then the results showed it decrease the debt in Mongolia. It means that instead of lending the money to other countries, China spends the money on developing domestic financial sector.

Mongolia economy is highly dependent on Chinese economy. There are two options for policy of the country's economic development: support export-oriented manufacturing or import replacement. Some countries implement both options, or choose one of them.

Thus, the loans for supporting small and medium-sized enterprises are financing the business. As Mongolia take out large amount of loans from neighboring countries, it causes to increase the export products.

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