The Determinant of International Government Bond Financing in ASEAN, Eastern Europe, Latin America and Sub-Saharan Africa

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Abstract

Over the past decade, domestic bond and international sovereign bonds have been issued by the government globally to finance a country. Bond financing has become one of an important part of the countries' financing. Unlike developed countries, issuing bond domestically can help raising fund as their people have a specific level of income, developing countries, which their people have lower level of income as well as poor standard of living, issuing bond domestically will not be a good channel for raising fund. Thus, the governments need to issue bond internationally, to raise fund from other countries. This paper looks at the determinants of International Government Bond financing across ASEAN, Eastern Europe, Latin America and Sub-Saharan Africa. The data set is international government bonds which are issued between 1996-2016. This study aims to examine how external and internal factors, which are Institutional Effectiveness, Economic Structure and Growth, Fiscal Flexibility, Monetary Flexibility and Global Liquidity, affecting the probability of a country to issue international government bond. In order to provide a detailed analysis of the probability of bond issuance, this paper applied a discrete choice logit model for binary choice (yes, no) responses to the determinant of bond issuance. To sum up, in comparison with countries which do not issue bond, a country tends to issue bond is having higher rate of government effectiveness. Economic Structure and Growth, Monetary Flexibility, Fiscal flexibility and Global liquidity do not have correlation on international bond issuance. International government bond issuance also depends on the country's characteristic.

Keywords: International Government Bond, Bond Financing, Sovereign Bond, Sovereign Bond issuance, Bond issuing, Government Bond Financing, Government Bond Issuing

Introduction

Over the past decade, domestic and international sovereign bonds have been issued by the government globally.Unlike domestic bond which has been issued in a country’s currency, international sovereign bond can be said to be bond issued by a government not in term of its currency but international currency such as US dollar or Japanese Yen – developed country. For example, International sovereign bond issued by Thai government will be in US dollar rather than Thai baht. International capital market has been filled up with international sovereign bond from countries around the world especially developing countries mostly in Asia and Sun-Saharan region. After Asia financial crisis in 1997, many countries have faced a liquidity dry up and capital outflow leading to financial market and economic collapse (Grandes and Peter, 2013) as well as in Asian Development Bank (2002), the crisis has led to debt default which created difficulty in borrowing credit and worsen the ability of countries to pay as there was a continuous capital outflow. Policymakers, economists and authorities have been discussed and searched for ways to help a country recovery from liquidity dry up and also to finance a country for its people.

There are various ways for government to finance the countries. One is taxation method. The governments can collect tax from their citizens and use that money to improve the country. A good tax system can raise revenue and help financing the country. The income tax can be said to be a crucial part of fiscal system (Robert C. Brown, 1933) However, there are some limitations on taxation method. One issue on taxation is the limitation of tax base especially for country with aging population. The aging population affects tax revenue of the country. As by 2030, when 20 percent of the baby boom generation is out of labor force, the country's labor force participation rate with be decrease as well as income and spending which will result in a decrease in a country's tax base. (Felix and Watkins)

On the other hand, apart from taxation, the government can borrow money by issuing bond to finance the country. Bond issuance becomes one of major ways to finance countries for many governments. When a government needs money to fund its activities, there is a distinct advantage to issue debt in its own currency. However, when the government increases it money supply to pay off debt - seigniorage - the country's currency will be no longer valuable.

Thus, one way to finance the countries without increasing inflation is to borrow from others by issuing international bond. Bond financing has become one of an important part of the countries' financing. According to Bank of International Settlements, the size of global bond market has grown from 22,116.6 billion USD in 4Q2017 to 24,557 billion USD in 1Q2018. Developed countries have issued both international and domestic bond around 18,000 billion USD in 1Q2018 compared to that of developing countries which have issued around 6,000 billion USD.

Although developed countries, issuing bond domestically can help raising fund for the country as their people have a specific level of income, for developing countries, which their people have lower level of income as well as poor standard of living, issuing bond domestically will not be a good channel for raising fund. Thus, the governments need to issue bond internationally, to raise fund from other countries.

Therefore, this can raise a question on which a government can sell bonds depend on how creditworthy the market considers the country to be and various factors. Therefore, this paper looks at the determinants of International bond financing across ASEAN, Eastern Europe, Latin America and Sub-Saharan Africa.

Domestic bond is the most favorable way for countries to finance themselves. On the other hand, as domestic bond is to sell bond for people living in that country, if that country is poor or has financial crisis or problem, how can the country finance itself?

Thus, Government Sovereign bond is another way for the government to finance the country. As Government Sovereign bond is a bond issuing in another currency, foreign investors can buy them easily which can attract more investors. When there is more investment in Government Sovereign bond, the country can use those capitals to pay foreign debt, invest in infrastructures and enhance welfares in order to increase people's basic livings.

Therefore, in this paper will review the pattern of Government Sovereign bond issuance across developing countries in ASEAN, Eastern Europe, Latin America and Sub-Saharan Africa region.

This paper will study the determinant of International bond financing in ASEAN, Eastern Europe, Latin America and Sub-Saharan Africa. The data set is International Government Bond which are issued between 1996 - 2016.

There are five main key factors in determining sovereign credit rating. (Sovereign Rating Methodology, S&P Global Rating). This methodology applies to issuer and issue ratings on all sovereign governments.

1. **Institutional Effectiveness**

The Institution Effectiveness explains a country's effectiveness and stability of its political institution as well as transparency and accountability of policymaking.

2. **Economic Structure and Growth**

Economic Structure and Growth can be driven by income levels, growth prospects and economic diversity and volatility. The following factor can enhance a country's economic growth and income level. In this paper is using GDP growth to measure economic growth prospect.

3. **Global Liquidity**

The external factor reflects a country's ability to obtain funds from abroad to meet its public and private sector. It can be referred to the transactions and positions of people in the country, the flow, the stocks and trade. Global liquidity has related to the degree to which a country has a better control on reserve currency or actively traded currency.

4. **Fiscal Flexibility and Performance**

Fiscal Flexibility and performance can reflect the sustainability of a sovereign's deficits and debt burden. It can be determined by the prospective change in General Government Final Consumption Expenditure.

5. **Monetary Flexibility**

Monetary Flexibility can determine that the country's monetary authority can fulfill its mandate while supporting sustainable economic growth and recovering from economic or financial crisis.

Methodology

According to S&P ratings, these are factors affecting the amount and whether or not countries will issue bond. There are four main internal factors and one external factor that have an impact on the countries' bond issuance. The first internal factor, Institutional Effectiveness can be described as government effectiveness or in other word, according to World Bank, the perceptions of the quality of public services, the quality of the civil service and the degree of its, the independence from political pressures, the quality of policy formulation and implementation as well as the credibility of the government's commitment to such policies.

The second factor, Economic Structure and Growth can be proxied by GDP growth (% of GDP) which is a measure of how fast the total output of the country is growing.

The third factor, Fiscal Flexibility and Performance which can be measured General Government Final Consumption Expenditure which is all government current expenditures for purchases of goods and services (including compensation of employees)

Lastly, Broadmoney Growth can describe the fourth internal factor which is Monetary Flexibility. In a country, money base can be seen as the total amount of a currency that is either in general circulation in the hands of the public or in the commercial bank deposits held in the central bank's reserves. Therefore, the money base is to measure how fast the money base of a country is growing.

However, the only external factor creating an impact on bond issuance is Global Liquidity. This paper will measure global liquidity by a country's current account receipt (CAR). The current account receipt can be defined as the sum of the balance of trade (goods and services exports minus imports), net income from aboard and net current transfers.

We can see that there are five main factors, institutional effectiveness, economic structure and growth, fiscal flexibility, monetary flexibility and global liquidity, all have an impact on government bond issuance of a country, in term of the amount or whether the country will issue bond or not.

In next chapter, we will see how much impact of each factor affecting the amount of government bond issuance from each country.

This study aims to examine how external and internal factors, which are Institutional Effectiveness, Economic Structure and Growth, Fiscal Flexibility, Monetary Flexibility and Global Liquidity, affecting the probability of a country to issue government bond. In order to provide a detailed analysis of the probability of bond issuance, this paper applied a discrete choice logit model for binary choice (yes, no) responses to the determinant of bond issuance.

Logit Model

(Gujarati, 2014) Although binary dependent variable models can be estimated by OLS, in which case they are known as linear probability models (LPM), OLS is not the preferred method of estimation for such models because of two limitations, namely, that the estimated probabilities from LPM do not necessarily lie in the bounds of 0 and 1 and also because LPM assumes that the probability of a response moves linearly with the level of the explanatory variable, which is counterintuitive. One would expect the rate of increase in probability to taper off after some point. Binary response regression models can be estimated by the logit or probit models.

The Logit model is a statistical probability model with two categories in the dependent variable. Logit analysis is based on the cumulative normal probability distribution. The binary dependent variable, takes on the values of zero and one. The Logit analysis provides statistically significant findings of which factors increase or decrease the probability of government bond issuance.

In the binary Logit model, the probability of issuing government bond was taken as 1, while the probability of not issuing government bond as 0.

The logit model

$$Prob(SBI = 1)it = \varphi\ (\Sigma k\ FACTORSik\ ;\ Controlsj)$$

The factors in the Logit Model are

1. Institutional Effectiveness : The Government Effectiveness (Geff)
2. Economic Structure and Growth : GDP growth (GDP)
3. Fiscal Flexibility : General Government Final Consumption Expenditure (Gcon)
4. Monetary Flexibility : Broadmoney Growth (broadmoney)

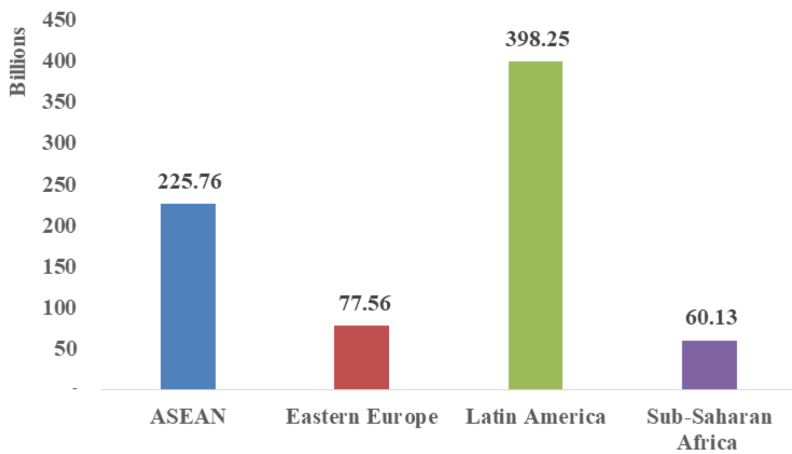
5. Global Liquidity : Trade (Trade)

Results and Discussion

Data Summary

The data collected from Bloomberg has shown that there are 36 countries that issue International Government Bond in ASEAN, Eastern Europe, Latin America and Sub-Saharan Africa.

International Government Bond



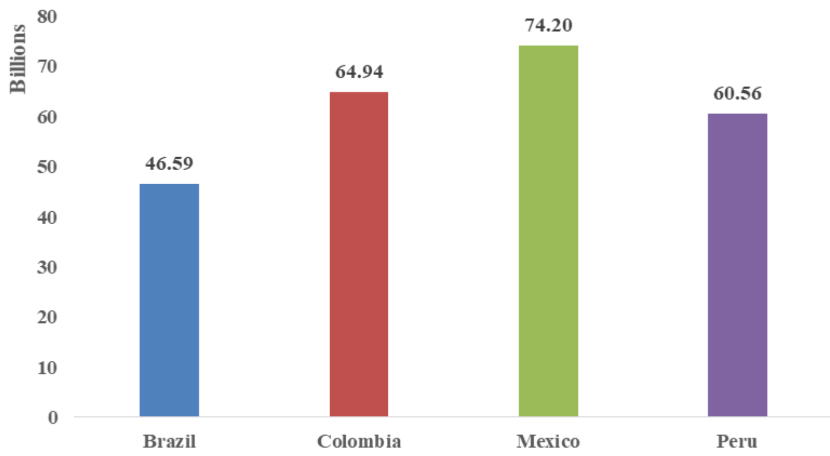
International Government Bond Issuance **(***Billion USD***)**

From the chart above, we can see that Latin America is a region that issued the most International Government Bond; followed by ASEAN, Eastern Europe and Sub-Saharan respectively. Latin America region has issued International Government Bond 398.25 billion USD while ASEAN which have been ranked as the second place has issued those of 225.76 billion USD. Eastern Europe and Sub-Saharan Africa have issued International Government Bond 77.56 billion USD and 60.13 billion USD respectively.

Eastern Europe	**10.18%**	**ASEAN**	**29.64%**
Bosnia	0.03%	Indonesia	11.21%
Croatia	2.54%	Philippines	4.12%
Cyprus	0.76%	Thailand	12.58%
Montenegro	0.33%	Vietnam	1.73%
Serbia	1.46%	**Latin America**	**52.28%**
Ukraine	5.05%	Argentina	0.19%
Sub-Saharan Africa	**7.89%**	Belize	0.17%
Congo, Rep.	0.13%	Brazil	6.12%
Côte d'Ivoire	1.61%	Chile	4.72%
Gabon	0.58%	Colombia	8.53%
Ghana	0.98%	Costa Rica	2.30%
Kenya	0.72%	Ecuador	3.05%
Namibia	0.37%	El Salvador	1.50%
Nigeria	0.39%	Guatemala	0.64%
Senegal	0.26%	Hondurus	0.26%
South Africa	2.06%	Mexico	9.74%
Zambia	0.79%	Nicaragua	0.00%
		Panama	1.72%
Grand Total 100.00%		Paraguay	0.63%
		Peru	7.95%
		Venezuela	4.78%

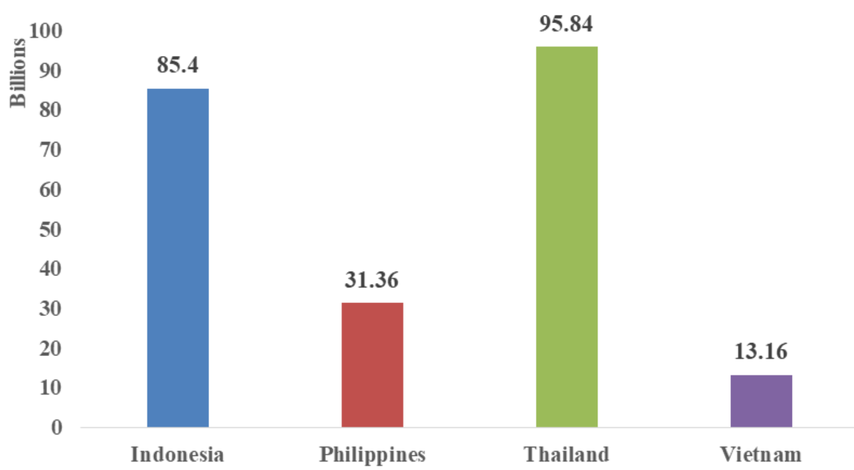
Percentage of International Government Bond Issuance by Countries

Nevertheless, from the table above, when we look deeply into the data, we have found that out of 36 developing countries that issue International Government Bond the most is Thailand, ASEAN region, which can be accounted for 12.58% of total. While Indonesia comes in the second place with 11.21%, Mexico comes in the third place with 11.17% of total in issuing International Government Bond.



International Government Bond Issued by Latin America countries **(***Billion USD***)**

Latin America is the region that issue International Government Bond the most. According to the Capital Flows to Latin America and the Caribbean report, released by the Washington Office of the Economic Commission for Latin America and the Caribbean (ECLAC), the strong international bond market performance of Latin America was supported by a tightening in bond spreads which attracts more investor searching for higher yield bonds as well as the improving economic condition of Latin America nations.



International Government Bond Issued by ASEAN countries **(***Billion USD***)**

Looking at ASEAN countries that issue International Government Bond, we can see that the 4 countries that represent ASEAN are the countries having the most population. According to ASEAN Member States, Indonesia has the most population in the region following by Philippines, Vietnam and Thailand respectively. Among all the ASEAN nations, the population is over 622 million people. The region has one of the largest economies and is expected to be in the 4th ranking largest economy in the World by 2050. It also has one of the largest labor forces in the world, falling only behind India and China.

According to 2016 edition of the International Debt Statistics (IDS) from World Bank, the data have shown that there was a gradual increase in international government bond in some Sun-Saharan countries, especially those who benefited from Heavily Indebted Poor Countries (HIPC) and Multilateral Debt Relief Initiative (MDRI) debt relief programs. Steady global market conditions and the potential for higher returns for investors have helped pave the way for more access to international markets, where the average return for these bond issuances is about 6.6%, with an average maturity of 10 years.

List of Countries with No Bond Issuance

ASEAN	**Latin America**
Brunei Darussalam	Uruguay
Cambodia	Bolivia
Laos	French Guiana
Malaysia	Guyana
Myanmar	Suriname
Singapore	
Sub-Saharan Africa	
Angola	Madagascar
Benin	Malawi
Botswana	Mali
Burkina Faso	Mauritania
Burundi	Mauritius
Cameroon	Mozambique
Cape Verde	Niger
CentralAfrican Republic	Réunion
Chad	Rwanda
Comoros	Sao Tome
Djibouti	Seychelles
Equatorial Guinea	Sierra Leone
Eritrea	Somalia
Ethiopia	Sudan
The Gambia	Swaziland
Guinea	Tanzania
Guinea-Bissau	Togo
Lesotho	Uganda
Liberia	Western Sahara
	Zimbabwe

According to the list of countries with no bond issuance in ASEAN, we can see that Malaysia is one of a country in ASEAN that has not issued bond between 1996-2016 period even though Malaysia economy is growing at a faster pace. The reason is that when the Government issue international government bond, it means that the government is borrowing money from other countries – becoming a borrower. However, for Malaysia, the Malaysian government does not want to rely much from others. As stated by Malaysian Prime Minister Mahathir Mohamad in ABS-CBN news, "when the person is a borrower, he is under the control of the lender and can fall into a debt trap." Malaysian government does not want to be controlled by other countries and also want to limit others' influences in the country.

Like Malaysia, Laos, Myanmar and Cambodia are considered to be the socialist countries which tend to be aware of capitalist influences. By issuing international government bond, these countries need to rely more on other countries' money, especially money from the capitalist. During 1996-2016, the globalization was not growing as much as it is today – not much foreign investment, infrastructure investment or the collaboration from abroad. Laos, Myanmar and Cambodia did not open much of their countries to others as well as borrow money from others by issuing international bond.

On the other hand, Singapore, which is a politically and economically stable country, does not issue many international bond even though the risk of its government defaulting is very low with the country's AAA country rating – the highest country rating. As stated in the Monetary of Singapore Guide, the Singapore Government has consistent budget surpluses over the years with a good manner of fiscal policy, the country does not need to borrow to finance its expenditure.

According to the Economist Intelligence Unit, in 2016, capital inflows to the Emerging Markets have resumed reflecting in rallies across the Emerging Market asset classes and Latin America is one of the most attractive regions. However, compared with other big economies like Brazil, Mexico and Argentina, the small economy countries tend to have a very weak market in international government bond amid slow economic growth and political turmoil across the World. As in 1980s, Latin America has faced with a debt crisis leading the region into recession, many countries has been in poverty and economic collapse. Many Latin America countries, especially the small economies, need to seek help from the IMF and reform their economies. Moreover, with the economic reformation and the lender asking for pay back, those countries have very weak economic indicators and considered to have a very low credit rating. With the reasons mentioned earlier, there were no demand for those countries' international government bond as the investors have concerned about the government defaulting problem.

Even though government bonds are a popular form of financing for many sub-Saharan African countries. One reason for this is that sovereign bonds have fewer conditions attached to them than the loans available from traditional sources such as the International Monetary Fund (IMF) (Tyson, 2015), many countries in Sub-Saharan Africa were still unable to issue international government bond. As borrowing money from others, especially issuing international government bond required specific qualifications like Economic Structure and Growth, Fiscal Flexibility, Monetary Flexibility, Global Liquidity and Institution Effectiveness (S&P ratings), some countries cannot meet the qualification and earn poor rating. When a country has low rating or non-investment grade country rating, the likelihood of issuing international government bond tend to be low as there is no demand for the bonds and a concern of government defaulting. In contrast, some countries do not issue international government bond even they have good credit rating because they have consistent income from exporting diamonds and other minerals.

Summary Table

Issue (at least once)	Mean	S.D	Min	Max
Geff	-0.216	0.56	-1.323	1.564
Gcon	11.547	3.45	5.12	24.759
broadmoney	169.27	4067	-99.875	108613.3
trade	79.948	32.42	15.636	184.686
gdp	3.864296	4.99	-14.8	88.958

Summary Table of Variables of countries that issue international bond at least once

Issue (No)	Mean	S.D	Min	Max
Geff	-0.492	0.8	-2.446	2.437
Gcon	15.23	8.05	0	84.508
broadmoney	23.352	138.36	-88.789	4105.573
trade	88.772	67.89	0.167	531.737
gdp	5.116	8.3	-36.7	149.973

Summary Table of Variables of countries that never issue international bond

From the summary tables above, the result can be interpreted that countries that issue International Government Bond at least once have higher average of government effectiveness (Geff) which means that those countries tend to have lower rate of corruption and better quality of public services. Furthermore, the countries that issue International Government Bond tend to have higher average growth rate of Broadmoney (broadmoney). In other words, the growth rate of money base in countries which issue International Government Bond at least once are higher.

On the other hand, the General Government Final Consumption Expenditure (Gcon), Trade (trade) and GDP growth (gdp) have no different between countries those issue and those do not issue International Government Bond.

Panel Logit model, Fixed Effect

Logit Model, Fixed Effect ; n = 35/36		
	Coef	z
Geff	-0.627	-1.54
Gcon	0.066	1.15
broadmoney	-0.00003	-0.24
trade	-0.006	-0.74
gdp	-0.0139	-0.47

This paper has used the Logit Model, Fixed Effect to determine which factors affect International Government Bond in ASEAN, Eastern Europe, Latin America and Sub-Saharan Africa. The result has shown that only 35 out of 36 countries can be calculated. The coefficient of each factors has been shown under Coef column and the z value has been shown under z column. The only factor that affect how a country issue International Government Bond significantly is Government Effectiveness (Geff).

Positive Effect

If Gcon increases by 1 unit, the probability that a country will issue foreign bond increases by 6.6% insignificantly.

In other words, if General Final Government Consumption Expenditure of a country increases, the likelihood that a country will issue International Government Bond increases by 6.6% but this effect is insignificant to the issuance.

Negative Effect

If Geff improves by 1 unit, the probability that a country will issue foreign bond decreases by 62.7% significantly.

If boardmoney improves by 1 unit, the probability that a country will issue foreign bond decreases by 0.003% insignificantly

If trade increases by 1 unit, the probability that a country will issue foreign bond decreases by 0.6% insignificantly.

If gdp increases by 1 unit, the probability that a country will issue foreign bond decreases by 1.4% insignificantly.

In other words, when the Government Effectiveness (Geff), Broadmoney Growth (broadmoney), Trade (trade) and GDP growth (gdp) improve, the likelihood of a country to issue International Government Bond will decrease.

However, only Government Effectiveness (Geff) significantly affects the likelihood of International Government Bond of selected countries.

Conclusion

To sum up, in comparison with countries which do not issue bond, a country who tends to issue bond is having higher degree of government effectiveness and higher rate of monetary flexibility. However, General Government Final Consumption Expenditure, Trade and GDP tend to be lower if a country issue foreign bond at least once.

In detail, when you have more effective government, lower rate of corruption and better quality of public services, others will lend more money to you as they are sure that you can pay them bank. Thus, you tend to issue more international bond.

International bond issuance depends on the country's characteristics. For example, Indonesia has lower government effectiveness - higher rate of corruption, unstable political situation, a lower level of GDP per capita but it also has a good current account balance and higher level of money base. Indonesia is the most likely to issue international bond.

Data Measurement and Sources

Variables	Measurement of Variables	Data source
PROB	Sovereign a Bond Issuance	Bloomberg
INSTU	Institutional effectiveness proxied by Government Effectiveness	World Bank's Worldwide Governance Indicators [WGI]
ECON	Economic structure and growth proxied by GDP growth (% of GDP)	World Bank's Worldwide Development Indicators [WDI]
GLOBAL	Global liquidity proxied as Term of Trade	World Bank's Worldwide Development Indicators [WDI]
FISCAL	Fiscal flexibility and performance proxied as Final Consumption of Government Expenditure	World Bank's Worldwide Development Indicators [WDI]
MONET	Monetary flexibility proxied as Broadmoney Growth (% of GDP)	World Bank's Worldwide Development Indicators [WDI]

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