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THE IMPACT OF GOVERNMENT DEBT ISSUANCE ON LENDING RATE IN ASEAN-5 COUNTRIES

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I. INTRODUCTION

1.1. Background

ASEAN-5 countries (Thailand, Malaysia, Philippines, Indonesia, and Singapore) had been hit by substantial economic crisis twice. First was the 1997 economic crisis which occurred first in Thailand and infected its neighboring countries. This crisis had caused many investors pulled their funds out (capital outflow) from the countries because they consider the economic characteristics of the countries are relatively similar. Second was the 2008 global economic crisis. Governments of the countries have already responded quickly to the crisis with appropriate financial, monetary and fiscal policies and so far the impact on financial stability has been limited. Despite the fact, Southeast Asia was predicted to grow 0.6 percent in 2009 and 4.5 percent in 2010.[1]

Slower global and regional growth, despite easier monetary conditions, suggests that economies in relatively comfortable fiscal positions are likely to introduce fiscal stimulus packages, boosting government bond issuance. Asia's local currency bond markets have shown great resilience to global credit turmoil and can be a key source of funds for the region's finance expansionary fiscal policies. Moody's Investor Service predict that global sovereign debt will hit $49.5 trillion by the end of 2009, a 45 percent climb since 2007 as the credit crisis takes a toll.[2] Local currency bond markets in Emerging East Asia[3] grew 14.8 percent year-on-year in third quarter of 2009. The government bond market grew by 9.5 percent and the corporate bond market grew 30.3 percent in the same period. Total bonds outstanding reached USD 4.2 trillion at end-September 2009. The region's local bond markets accounted for 6.2 percent of total global bonds outstanding at the end of first quarter 2009 with only 2.1 percent at end of 1996 before the onset of the Asian financial crisis (ADB, 2009).

Table 1.1. Local Currency (LCY) Bonds Outstanding in Major Market (USD billion)

	First Quarter 2009		Fourth Quarter 1996	
	LCY Bonds Outstanding	% of World Total	LCY Bonds Outstanding	% of World Total
United States	24,962	42.3	10,926	42.8
Japan	10,289	17.4	4,456	17.4
Emerging East Asia	3,658	6.2	537	2.1
China	2,192	3.7	62	0.2
Rep. of Korea	796	1.3	283	1.1
ASEAN-5	556	0.94	158	0.6
Indonesia	73	0.1	7	0.03
Malaysia	160	0.3	81	0.3

[1] ADB upgrades forecast for Asia, predicts India growth at 7 percent. December 15th 2009. http://www.thaindian.com/newsportal/business/adb-upgrades-forecast-for-asia-predicts-india-growth-at-7-percent_100289464.html

[2] Global sovereign debt to hit $49.5 trillion. November 24th 2009. http://www.forbes.com/feeds/reuters/2009/11/24/2009-11-24T213120Z_01_N24501946_RTRIDST_0_SOVEREIGN-ISSUANCE-MOODYS.html

[3] Emerging East Asia comprises the People's Republic of China; Hong Kong, China; Indonesia; Republic of Korea; Malaysia; Philippines; Singapore; Thailand; and Viet Nam

Singapore	56	0.1	28	0.1
Philippines	120	0.2	25	0.1
Thailand	147	0.2	18	0.1

Source: Asia Bond Monitor, November 2009, ADB

Despite being the key source of funds to finance expansionary fiscal policies, OECD has warned countries with mounting sovereign (public) debt. The debt could jeopardize the sustainability of their economic recovery from the global financial crisis over the next several years when it should be refinanced. Among ASEAN-5 countries, Singapore has the largest public debt (99.2 percent of GDP) in 2008. Philippines with 56.9 percent public debt of GDP is in the second place, followed by Malaysia, Thailand, and Indonesia with share of 40 percent, 37.9 percent, and 29.3 percent respectively.[4] Singapore also led the government bond market growth in the region, followed by Indonesia and Thailand (table 1.2), reflecting continued issuance to fund the government's economic stimulus program.

Table 1.2. Year on year Growth of ASEAN-5 Local Currency Bond Market in Third Quarter of 2009 (%)

	Total	Government	Corporate
Indonesia	18.1	20.1	1.3
Malaysia	5.5	4.7	6.5
Philippines	7.5	3.0	65.8
Singapore	17.3	20.7	13.1
Thailand	15.8	13.1	27.2

Source: Asia Bond Monitor, November 2009, ADB

One reason behind the rapid development of bonds issuance in ASEAN-5 countries, according to the IMF, is because Asia outstrips other regions for the first time in contributing the global recovery. Given the condition, many investors turn their interest into financial instruments, including bonds, issued by ASEAN countries that are part of Asia. In addition, some investors consider that Asian bonds have a lower risk than bonds issued by other regions. The lower risk assessment is based on the fact that government bonds issuance is higher than corporate ones, as evident in the following table 1.3.

Table 1.3. Composition of ASEAN-5 Total, Government, and Corporate Local Currency Bond Markets (% of GDP); 1997-2009

Countries	Composition	Annual Growth Rate (1997-2003)	2003	2004	2005	2006	2007	2008	2009
Indonesia	**Total**	9.3	26.4	19.95	19.19	20.66	20.23	15.7	16.6
	Government	8.1	24.2	17.39	17.1	18.82	18.23	14.3	15
	Corporate	28.8	2.3	2.56	2.08	1.84	2	1.5	1.6
Malaysia	**Total**	9.6	95.3	77.57	77.19	75.63	86.64	78	94.2
	Government	13	38.9	38.56	37.8	38.21	45.65	42.3	51.4
	Corporate	13.7	43.3	39.01	39.39	37.43	38.99	35.6	42.8
Philippines	**Total**	5.2	31.6	40.77	41.13	38.34	35.98	36.3	38
	Government	4.5	30.3	40.45	39.25	35.34	32.77	33.4	33.4
	Corporate	50.6	1.3	0.32	1.88	3	3.21	2.8	4.6

[4] The World Factbook. https://www.cia.gov/library/publications/the-world-factbook/rankorder/2186rank.html

Singapore	**Total**	18.9	73.6	121.39	69.32	70.28	72.05	68.5	81.9
	Government	19	40.6	67.16	39.12	39.54	40.34	39.3	48
	Corporate	18.8	33	54.23	30.19	30.74	31.71	29.2	33.8
Thailand	**Total**	35.2	40.7	39.97	45.68	50.49	55.4	54	65.2
	Government	116.3	21.4	26.6	31.39	33.76	39.06	42.9	52.1
	Corporate	13.5	13.5	13.37	14.29	16.72	16.34	11	13.2

Source: Asia Bond Monitor, ADB

More than 15 percent annual growth rate of government bonds per GDP during the period of 1997-2003 is evident in Singapore and Thailand. Thailand even has very high growth of 116.3 percent. For Indonesia, Malaysia, and Philippines, during the same period, growth of corporate bonds still significantly exceeds growth of government bonds. In general, after the 2008 global financial crisis, all countries experience an increase of government bonds per GDP in 2009, proving that issuing government bonds is considered as one right ways to finance government budget deficit.

There is little doubt that the use fiscal stimulus packages by many governments to stave off even worse economic performance have its implications for public finance. This is because while the economic crisis has lowered state income especially from tax revenues, expenditure has soared due to the need to stimulate the economy. Large state budget deficits raise concerns of crowding out private investment.

In the backdrop of the above, this study would like to examine the impact of government debt issuance in ASEAN-5 countries. The research question will be: "does the increasing government debts in ASEAN-5 countries induce a rise in interest rates?" A better understanding on this subject will be beneficial for the governments, particularly in the recent crisis recovering process.

1.2. Statement of the Problem

It is evident that the impact of government deficit on interest rate to this day is far from clear. Some studies indicated that increasing government debts in the financial market induces a rise in interest rates, while others showed no impact. Thus, the impact of government debt on interest rates remains a debatable point. There is still need for better knowledge on the impact of government debt issuance on interest rates. Therefore, achieving high economic growth in future, it is important for ASEAN-5 governments to have a better understanding on this subject.

1.3. The Significance and Policy Relevance of The Research

The research findings will have a strong relevance to government finance of ASEAN-5 countries. The expectation of research output is to acquire a better understanding of determinants of the impact of government debt issuance in the financial market on interest rates in ASEAN-5 countries.

This research will make contributions for policy makers, in particular. Policy makers will have better judgment on the impact of government debt issuance on interest rate which could lead to a decrease in investment.

II. ASEAN ECONOMIC OVERVIEW

2.1. Growth and GDP Per capita

One of the main objectives of ASEAN cooperation is the improvement of economic welfare in the South East Asia region, by improving and accelerating economic growth. This cooperation seems fairly fruitful; indicated by ASEAN economic growth which is quite high compared to world economic growth. For example, in the year of 2008, ASEAN has a 4.4% growth, while IMF data shows that world economic growth is 3.7%. Although this growth is not evenly distributed to all member countries, but the countries other than ASEAN-5 (Malaysia, Philippine, Singapore, Thailand, and Indonesia) even has a relatively high growth. In detail, the economic growth of ASEAN countries during the last few years can be seen in the following table:

Table 2.1: Rate of Economic Growth, 2000-2008

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Brunei Darussalam	2.9	2.7	3.9	3.9	0.5	0.4	4.4	0.6	0.4	0.2
Cambodia	8.4	5.5	5.2	5.2	10.0	13.6	10.8	10.2	6.0	0.1
Indonesia	5.4	3.6	4.5	4.5	5.0	5.7	5.5	6.3	6.1	4.5
Lao PDR	5.8	5.7	5.9	5.9	6.9	7.3	8.3	6.0	8.4	4.6
Malaysia	8.9	0.5	5.4	5.4	7.2	5.3	5.8	6.3	4.6	-1.7
Myanmar	13.7	10.5	5.5	5.5	5.0	4.5	6.9	5.6	4.5	4.3
Philippines	4.4	4.5	4.4	4.4	6.4	4.9	5.3	7.4	3.6	0.9
Singapore	10.1	-2.4	4.2	4.2	8.8	6.6	7.9	10.1	1.1	-2.0
Thailand	4.8	2.2	5.3	5.3	6.3	4.7	5.2	4.9	2.6	-2.3
Viet Nam	6.8	6.9	7.0	7.4	7.8	8.4	8.2	8.5	6.3	5.2
ASEAN	6.3	2.9	5	5.4	6.3	5.7	6	6.7	4.4	1.3
ASEAN 5	6.1	2.3	4.8	5.2	6.2	5.4	5.7	6.5	4.2	0.8
BCLMV	7.5	7	6.4	7	6.9	7.6	7.9	7.6	5.7	4.4

Source: ASEAN Statistics

Table 2.1 shows that, despite having fluctuation, in the period of 1998-2008, ASEAN average economic growth is 5.5%, while in the period of 2003-2008 it has 5.8% average value. This growth is quite high compared to the world economic growth 2003-2008 which is 3.42% according to United Nations (2009).

Although ASEAN has a relatively high growth, the gap level of prosperity among member countries is still quite high. Measured by real per capita income level, the wealthiest member has per capita income of more than 50x per capita income of the poorest member. In detail, the development of per capita income of ASEAN countries during the last few years can be seen in the following table:

Table 2.2: GDP per capita (US $ constant 2000), 2003-2008

Country	2003	2004	2005	2006	2007	2008
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Brunei Darussalam	18538.37	18258.99	17967.88	18391.93	18149.65	-
Cambodia	340.23	369.50	411.85	448.90	486.69	510.81

Indonesia	876.51	908.75	948.36	988.16	1037.51	1087.46
Lao PDR	362.48	379.52	399.73	425.95	450.09	474.92
Malaysia	4252.89	4458.56	4612.09	4792.17	5007.88	5151.29
Myanmar	-	-	-	-	-	-
Philippines	1028.12	1073.28	1105.55	1143.16	1201.74	1225.36
Singapore	23703.85	25650.92	26885.83	28233.75	29185.16	27990.65
Thailand	2192.72	2304.83	2386.58	2488.23	2592.48	2640.28
Viet Nam	473.41	503.26	538.69	575.88	617.11	647.19

Source: ASEAN Statistics

The above table shows the high level of per capita income gap among ASEAN member countries. Singapore has the highest per capita income, while Lao PDR has the lowest one. Among ASEAN 5 countries, per capita income of Indonesia is the lowest one.

2.2. Capital Inflow

The high level of per capita income gap among ASEAN member countries is likely to have impacts on other economic indicators, such as level of financial market development which serves as investment infrastructure and technological advances. The gap seems to have similar proportion with capital inflow gap which one of its important components is FDI inflow. The following table shows the FDI inflow of ASEAN members during 2003-2008:

Table 2.3: FDI Inflow (Millions of US Dollars), 2003-2008

Country	2003	2004	2005	2006	2007	2008
(1)	(5)	(6)	(7)	(8)	(9)	(10)
Brunei Darussalam	3,123.0	212.0	288.5	433.427.8	260.2	239,2
Cambodia	84.0	131.4	381.2	483.2	867.3	815,2
Indonesia	-596.1	1,894.5	8,336.0	4,913.8	6.928.3	7,918.5
Lao PDR	19.5	16.9	27.7	187.4	323.5	227.8
Malaysia	2,473.2	4,623.9	4,063.6	6,059.7	8,401.2	7,318.4
Myanmar	291.2	251.1	235.9	427.8	257.7	975.6
Philippines	490.8	688.0	1,854.0	2,921.0	2,916.0	1,520.0
Singapore	11,664.0	20,052.2	14,373.2	27,681.1	31,550.3	22,801.8
Thailand	5,235.0	5,862.0	8,048.1	9,459.6	11,238.1	9,834..5
Viet Nam	1,450.1	1,610.1	2,020.8	2,400.0	6,739.0	8,050.0
ASEAN	24,234.70	35,342.20	39,629.00	54,967.20	69,481.60	60,596.00
ASEAN 5	19,266.90	33,120.60	36,674.80	51,035.30	61,033.90	50,549.00
BCLMV	4,967.80	2,221.50	2,954.20	3,931.90	8,447.70	10,047.00

Source: ASEAN Statistics

Similar to the per capita income, Table 2.3 shows that Singapore and Lao PDR has the highest and the lowest FDI inflow. Indonesia's FDI inflow fluctuates heavily. In 2003 Indonesia's FDI has minus value, but it rises sharply in 2005. For all ASEAN countries, the value of FDI inflows tends to increase from time to time. However, of the total FDI inflow into ASEAN, more than 80% enters ASEAN-5 and the rest goes to BCLMV countries (Brunei, Cambodia, Lao PDR, Myanmar and Vietnam).

2.3. Inflation

Different from data of GDP per capita and FDI inflow, inflation pattern of ASEAN members can not be distinguished easily. The detailed data of inflation rate year-on-year average period for ASEAN members can be seen in the following table:

Table 2.4: Inflation rate year-on-year average period (%), 2000-2008

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Brunei Darussalam	1.2	0.6	-2.3	0.3	0.9	1.2	0.1	0.3	2.7
Cambodia	-0.8	1.1	3.2	0.3	3.9	5.8	4.7	5.8	6.5
Indonesia	3.8	11.5	11.9	6.8	6.1	10.5	13.1	6.4	15.9
Lao PDR	23.1	7.8	10.2	16.0	10.8	6.8	-3.1	3.7	8.6
Malaysia	1.4	1.4	1.8	1.1	1.4	-5.5	3.6	2.0	5.5
Myanmar	-0.1	21.1	57.1	36.6	4.5	10.5	18.9	34.9	26.8
Philippines	4.0	6.8	3.0	3.5	6.0	7.6	6.3	2.8	9.3
Singapore	1.3	1.0	-0.4	0.5	1.7	0.5	1.0	2.1	6.5
Thailand	1.6	1.6	0.6	1.8	2.8	4.5	4.6	2.2	5.5
Viet Nam	-1.8	-0.4	3.8	3.1	7.8	8.6	7.2	8.3	23.1
ASEAN	2.4	5.7	6.0	4.2	4.4	5.5	7,6	4.9	9.8
ASEAN 5	2.7	6.0	5.3	3.7	4.1	5.2	7.5	3.8	8.2
BCLMV	-0.2	3.2	11.5	8.5	6.6	8.2	8.3	12.2	20.8

Source: ASEAN Statistics

Data in Table 2.4 shows that several countries have relatively high fluctuation of inflation rate. For example, Myanmar in 2000 suffers 0.1% of deflation, but in 2003 has relatively high inflation of 57.1%. For some other countries, especially ASEAN-5, the fluctuation of inflation is not very sharp. Inflation of Singapore and Malaysia tends to settle below 5%. Inflation rate for all ASEAN members is always below 10%. ASEAN 5 has range of inflation of 3% to 8% and BCLV group has wider range of -0.2% to 20.8%. If inflation is used as an indicator of economic stability, it can be said that the ASEAN-5 has better economic stability than other members of ASEAN. In 2008, some ASEAN countries experience a significant inflation leap, so there is indication that the global financial crisis has impacts on the economic stability of ASEAN. As impacts of the crisis, in 2009, almost all countries suffer deflation. High inflation in 2008 probably is because the increase in import whose value exceeds 100 USD.

2.4. Currency Exchange Rate

Currency exchange rate for ASEAN members during year of 2000 to 2008 is relatively stable, except for Myanmar which its exchange rate is relatively declining. The currency exchange rate of ASEAN members from 2000 to 2008 is shown in the following table:

Table 2.5: Currency Exchange Rate (Average of Period, national currency per US $)

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Brunei Darussalam	1.72	1.79	1.79	1.75	1.69	1.66	1.59	1.5	1.4
Cambodia	3,894	3,929	3,971	4,001	4,036	4,119	4,113	4,080	4,088
Indonesia	8,422	10,250	9,318	8,575	8,985	9,733	9,168	9,164	9,757

Lao PDR	7,888	9,008	10,188	10,554	10,560	10,697	10,054	9,567	8,643
Malaysia	3.8	3.8	3.8	3.8	3.8	3.79	3.65	3.44	3.33
Myanmar	287	548.00	830.00	737.00	859.00	1,025.00	1,162.00	1,156.00	1,103.00
Philippines	44.19	50.99	51.6	54.2	56.04	55.09	51.31	45.66	44.47
Singapore	1.72	1.79	1.79	1.74	1.69	1.66	1.59	1.51	1.41
Thailand	40.11	44.43	42.96	41.48	40.22	40.22	37.88	34.52	33.31
Viet Nam	14,168	14,725	15,280	15,509	15,704	15,817	15,963	16,121	16,303

Source: ASEAN Statistics

It can be seen from Table 2.5 that the fluctuation of currency exchange rate in ASEAN countries is not as high as the fluctuation of inflation. Singapore and Malaysia has relatively stagnant rate, while the exchange rate of Thailand tends to be stronger in the last periods. By using inflation indicator, ASEAN-5 countries are more stable than BCLMV group. But, by using exchange rate indicator, ASEAN 5 and BCLMV only have slightly different level of stability.

2.5. Interest Rate

Similar to the exchange rate pattern, fluctuation of interest rate in ASEAN is not high. However, several countries outside the ASEAN-5 tend to have higher interest rates than those of ASEAN-5. Data in table 2.6 below shows the fluctuation of deposit rates, while Table 2.7 shows the fluctuation of lending rates.

Table 2.6: Interest Rate on 3-Month Deposits, 2000-2008

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Brunei Darussalam	1.25	0.50	0.40	1.05	1.04	0.97	0.98	1.20	2.88
Cambodia	6.34	5.18	4.89	4.82	4.68	4.84	4.42	5.01	5.20
Indonesia	13.24	17.24	13.63	7.14	6.71	11.75	9.71	7.42	11.16
Lao PDR	13,50	12.13	12.00	14.33	10.47	6.75	7.00	6.69	6.00
Malaysia	3.47	3.21	3.20	3.00	3.00	3.02	3.19	3.15	3.04
Myanmar	9.50	9.50	9.50	9.50	9.50	9.50	12.00	12,00	-
Philippines	12.11	9.12	3.86	5.41	6.63	5.86	5.09	5.00	5.09
Singapore	1.70	1.02	0.78	0.40	0.41	0.56	0.57	0.51	0.39
Thailand	3.00	2.25	1.75	1.00	1.00	2.0-3.0	3.2-4.7	2.0-2.2	1.7-2.0
Viet Nam	3.89	5.82	6.80	6.00	6.6	7.68	7.68	7.20	12.59

Source: ASEAN Statistics

Table 2.7: Interest Rate Minimum Lending Rate, 2000-2008

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Brunei Darussalam	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	7.5
Cambodia	17.40	21.00	21.20	21.10	18.70	18.60	23.07	22.26	22.36
Indonesia	17.65	19.19	18.25	15.07	13.41	16.23	15.07	13.00	15.22
Lao PDR	15.50	18.00	16.00	20.00	23.33	21.45	19.80	24.00	18.86
Malaysia	7.22	6.67	6.50	6.11	5.98	6.20	6.72	6.72	6.48
Myanmar	15.00	15.00	15.00	15.00	15.00	15.00	17.00	17.00	-
Philippines	11.95	13.01	8.60	9.63	10.43	10.26	9.17	9.00	9.43

Singapore	5.80	5.30	5.35	5.30	5.30	5.30	5.33	5.33	5.38
Thailand	7.5-8.2	7.0-7.5	6.5 - 7.0	5.5-5.7	5.5-5.7	6.5-6.75	7.5-8.0	6.8-7.1	6.7-7.0
Viet Nam	10.20	8.68	9.48	8.40	9.00	10.20	9.96	11.52	15.17

Source: ASEAN Statistics

ASEAN-5 countries tend to have lower deposit and lending rate than other ASEAN-5 countries. However, there are two countries which have different pattern of interest rate, namely Indonesia and Brunei Darussalam. As one of ASEAN-5 countries, Indonesia has high level of interest rate, while Brunei has low level of interest rate despite its status as "other than ASEAN-5 countries". The high level of interest rate in Indonesia is probably caused by the high level of risk and high inflation.

2.6. Government Deficit

All ASEAN members suffer government budget deficit during 2000-2008, except Brunei Darussalam. The following Table 2.8 shows government deficit percentage on GDP.

Table 2.8: Government Deficit (percentage of GDP), 2000-2009

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009*)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Brunei Darussalam	12.51	4.44	-3.62	8.03	9.65	18.68	21.99	14.99	32.7	-0.4
Cambodia	-1.15	-3.14	-3.72	-3.61	-2.15	1.1	-1.5	0.64	0.1	2.4
Indonesia	-2.06	-2.14	-1.6	-1.67	-1.33	-0.5	-0.99	-1,43	0.7	-0.6
Lao PDR	-1,29	-5.00	-4.15	-4.35	-2.59	-4.54	-3.72	-2.64	-0.4	-
Malaysia	-5.74	-5,51	-5.59	-5.30	-4.10	-3.58	-3.33	-3.22	-4.8	-2.8
Myanmar	-4.34	-		-	-	-	-	-	-	-
Philippines	-4.11	-4.00	-5.37	-4.63	-3.82	-2.69	-1.03	0.19	-0.9	-3.9
Singapore	1.95	1.58	-1.09	-1.58	-1.14	-0.34	0.57	3.25	1.5	-0.3
Thailand	-2.23	-2.40	-1.41	0,41	0.13	-0.65	2.32	-1.69	-1.1	-4.4
Viet Nam	-2.81	-2.52	-2.41	-2.82	-1.68	-1.59	-1.77	-2.19	-2.1	-4.6

Source: ASEAN Statistics
*) ASEAN Secretariat

The pattern of government deficit owned by ASEAN-5 and BCLMV are also not significantly different. Malaysia and Philippines tend to have higher percentage compared to BCLMV; Singapore has lower, and Indonesia and Thailand have almost the same percentage. The government of each country can finance the deficit with foreign or domestic debt which then definitely will cause different effect for each.

III. LITERATURE REVIEW

Crowding out becomes a hot issue lately since the great recession hit the world economy in 2007. The global economic crisis started from U.S. when sub prime mortgage defaults have led many countries to save their financial markets and to stimulate their economy. As a result, the outstanding debt in many countries increases significantly. This effect of global financial crisis is worsened by Greek economic crisis which is caused by the government of Greek's difficulty in paying its debt. Lately, many economists concern that debt rising occurred in many countries will have negative impact on private sector.

Crowding out is not a new issue in the macroeconomic literature. It is defined by Investopedia as "an increase of interest rates due to rising government borrowing in the financial market". Crowding out occurs when increasing of interest rates caused by expansionary fiscal policy led to decreasing of private spending, especially investment.

There are many degree of crowding out according to its impact. For example, a full crowding out can occurs in a full employment economy. In this case, crowding out can occur easily since increasing demand in full employment economy will increase interest rates. So, in the classical case, an increase in government deficit leads to full-fledged crowding out. But, in an economy below full employment level, increasing government spending can also cause crowding out, not in the form of a full crowding out. In the unemployed economy, increasing government spending can increase interest rates. This can happen whenever a rise in aggregate demand leads to an increase in income. Increasing income induces a rise in saving. But the rise of savings cannot finance a larger budget deficit without influence private borrowing, then interest rates will rise as the budget deficit increases. So, crowding out can occur even in economy which are not full employed. There is a possibility that even in unemployment economy the increasing of budget deficit does not lead to crowding out. This can happens if the deficit induces an increase in output, which precludes a rise in interest rates, if the monetary authority accommodates fiscal expansion by raising the money supply, which in turn prevents a rise in interest rates. This case usually referred to as monetizing budget deficit (Dornbusch and Fisher 1990:149-157).

Crowding out is not only occurs because of demand side phenomenon. In the classical perspective, supply side also can explain crowding out effect. In this case, fiscal expansion which increase demand may lead to firms experiencing excess demand for goods, sparking an increase in prices instead of output. So, the firm increases prices until excess demand is gone, reaches full employment level of output. In the position of such level of output, real balances decrease, and interest rates rise inducing a reduction in private expenditure to make room for an increase in government spending (Dornbusch and Fisher 1990:219-257).

Crowding out become serious issue when the government spends more money and finances it by borrowing money in the financial market using debt securities. This induces a rise in market interest rates, which leads to private sector difficulties in raising external financing to finance its expantion or investment. Because government debt usually are considered risk free assets, but pays the market interest rates. So, if government debt increases, the private sector and individuals have to compete to the government in the market. In this case, the competition pushes market interest rates higher. Even temporary government deficit which is finance by issuing of debt instruments in the market can induce an increase in interest rates in the event an increase in government consumption substitutes private consumption, as long

as the substitution is less than one for one (Barro, 1986). So, increasing government expenditure will have some impact on private sectors.

As mentioned before that crowding out is not a new issues in economy, there are many economists have made extensive research on wheter crowding out occures when government budget deficit increase (Carlson and Spencer (1975), Plosser (1982), Hoelscher (1983), Bart, et.al. (1985), Evans (1985), Tanzi (1985), Barro (1986), Hoelscher (1986), Barro (1988), Zahid (1988), Cukierman (1989), Roubini and Sachs (1989), Ostrosky (1990), Karras (1994), Cebula (1997), Nieh and Ho (2006), Arteta and Hale (2006), Allani (2006), Cebula & Cuellar (2009), Trebesch (2009)). Some studies found that crowding out occur, but on the contrary some found no influences of government deficit on private sector.

Crowding out is not new issue in the economy. Many countries experiencing the budget deficit for many years, both in develop or developing countries. That is whay study on the impact of state budget deficit on the private sector has also had done a lot. A study done by Cebula & Cuellar (2009) which use quarterly data for the period 1973.1-2004.4 in the U.S. shows that crowding out occured. The study shows that the federal budget deficit, expressed as a percent of GDP, has a positive and statistically significant impact on the ex ante real interest rate yield on Moody's Baa-rated corporate bonds (as a proxy of private sector borrowing rates). Other study like Plosser's (1982) which use U.S. data also shows the same result. In this case higher interest rates are associated with increased in government spending. Others study like Carlson & Spencer's study (1975) and also Tanzi's (1985) shows the same result. Also Zahid (1988) shows the same result using data of 1971 to 1980 in the U.S. He shows that when government budget deficit increase has a significantly positive impact of deficits on real interest rates in the market. Cebula study also shows there was crowding out (1997). His study using U.S. data from 1973-1995 shows that increasing federal budget deficits have a positive and significant impact on the ex ante real interest rate yields on ten-year Treasury notes, Moody's Aaa-rated long-term bonds, and Moody's Baa-rated long-term corporate bonds. The study shows that private capital formation is sensitive that interest rates, and imply some degree of "crowding out". In addition, Roubini and Sachs (1989) by using OECD data find that the rise in size of the government was importantly associated with the slowdown in output growth after 1973, as well as with the gradual adjustment of spending ratios to long-run values.

The crowding issue are still a hot debate since there is no clear conclusion since other studies showed different result. Some studies also find no impact of increasing government deficit on private sector spending showed that there was no crowding out. Like study done by Barro (1988) using U.S. data from 1983 to 1987, shows that Ricardian equivalence theorem "substitution of a budget deficit for current taxes (or any other rearrangement of the timing taxes) has no impact on the aggregate demand for goods". This means that budget deficits and taxation have equivalent effects on the economy, showed that there was no effect on private sector. Also other study done by Hoelscher (1983) indicates that there is no correlation between government borrowing and short term rates, no evidence of significant relationship between federal borrowing and short term interest rates for the post-WWII period in the U.S. Study done by Evans (1985), which use 3 period data during Civil War, World War I, World War II, and Post War Periods in the U.S. shows no crowding out in the US. Even the study shows strong support for a negative association between the two variables rather than a positive one. Also Barro in his study (1986) shows that no crowding out, using British data from early 1700s through World War I. The study done by Ostrosky (1990) using US data from 1955-1984 shows no crowding out. The federal deficit does not have a

significant impact on the nominal interest rate in U.S in the period. The increases on government bond issuance also does not affect interest rates in Japan for the period of 1998-2006 because they are insensitive to government expenditures and they depend on interest rates levels in the international financial market more than in the domestic financial market because of globalization and integration among financial markets (Allani, 2006). Nieh and Ho (2006), using annual data (1981–2000) of 23 OECD countries, also shows that government and private consumption are found to be complements, which shows that expansionary government spending does not crowd out private consumption. Complementary between private and government consumption also found in 30 countries, ranging from Austria to Thailand, in 1950-1987 (Karras, 1994). So, some studies support the existence of crowding out, but some studies do not support it.

In the background of controversion between the two paradigm which showed some indicated that increasing government debts in the financial market induces a rise in market interest rates, while others showed different result. This makes the impact of government debt on interest rates remains a debatable point until now. Study in the areas are still needed to understanding on the impact of government debt on private especially in the period when many countries experiencing high fiscal deficit recently. If crowding out occurs, fiscal stimulus which aim to increase economic growth may be not effective. So, understanding the influence that the issuance of government debt instruments have on the economy is important, especially in developing countries which usually have a lot of government debt to develop their economies.

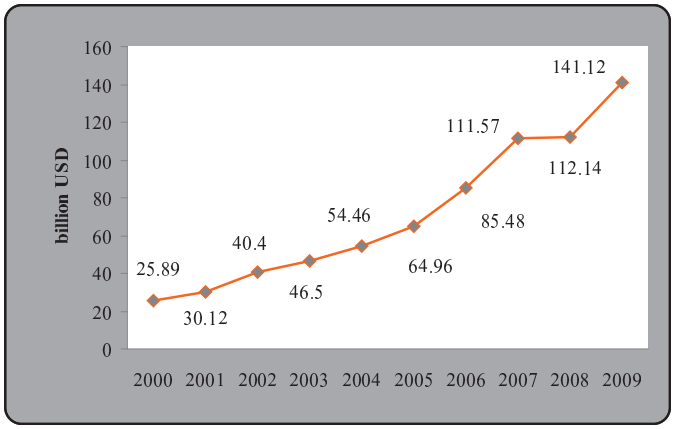
The five ASEAN countries will be studied are developing countries which are still in the process of developing their economies. The countries need large funds to develop their economy which usually earned from abroad or from issuing debt if they already have advanced financial markets. Thus, the recent great recession suffered by the world certainly has impacts on the ASEAN region. Various stimulus programs using state budget will increase fiscal deficit. It is feared that the crowding out has occurred in the ASEAN region. A phenomenon that will be studied further in this research.

IV. COUNTRY ANALYSIS

4.1. Thailand

Thailand has the highest value of government bonds growth among ASEAN-5 countries. In 2000, Thailand's government bonds values around 20 billion USD. In 2009, the value reaches 140 billion dollars. This means, during the last 10 years, the value has escalated 7 times (700 percent). The following figure shows the value of Thailand government from 2000 to 2009.

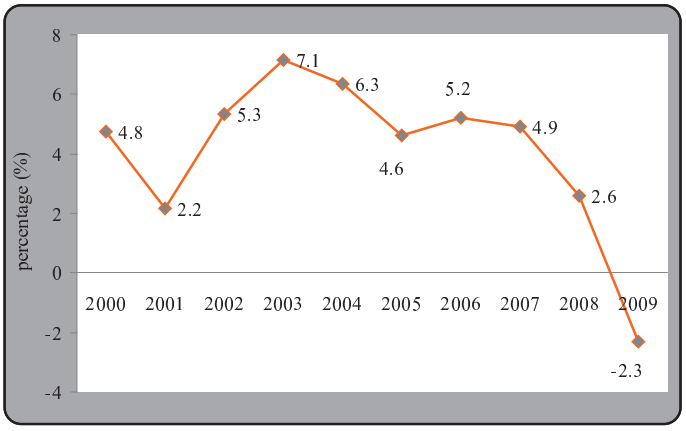
Figure 4.1. Thailand Government Bonds, 2000-2009



Source: ADB, 2009

The figure shows that Thailand government bonds increases from time to time in the period of 2000-2009. The graph also shows a soaring increase from 2008 to 2009. This rise in reflects substantial increases of funding for fiscal stimulus programs. Thailand's issuance of THB80 billion (USD2.35 billion) of retail savings bonds in July 2009 is also an important additional factor driving the growth rate for Thai government bonds[5].

Figure 4.2. Growth of GDP of Thailand, 2000-2009



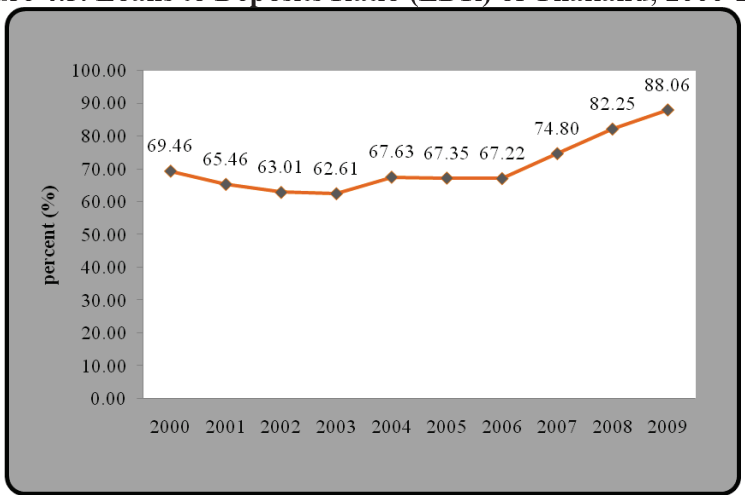
Source: ADB, 2009

[5] Asian Development Bank. 2009. *Asian Bond Monitor*. November.

Figure 4.2. shows GDP growth of Thailand. Thailand's GDP growth suffers a quite drastic decrease from 2.6 percent in 2008 to minus 2.3 percent in 2009. Therefore, the increasing value of government bonds in the period is to stimulate economy to recover from the impacts of the global crisis.

Loan to deposit ratio (LDR) of Thailand as shown in Figure 4.3 is around 70 to 75 percent in the period of 2000 to 2007. In 2008, the LDR increases significantly to 80 percent and in 2009, it reaches 88 percent.

Figure 4.3. Loans to Deposits Ratio (LDR) of Thailand, 2000-2009

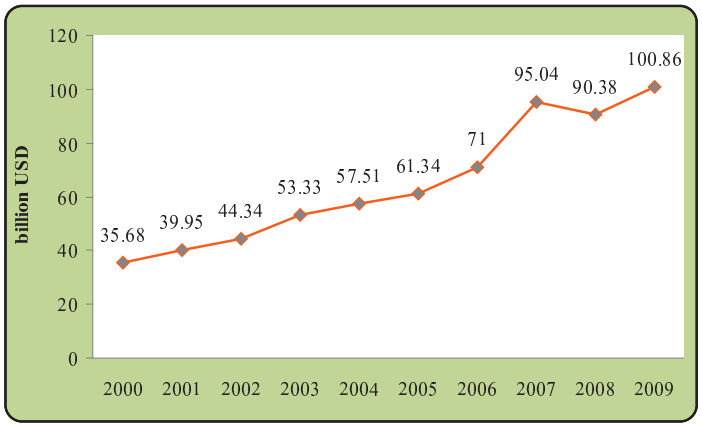


Source: ADB, 2009

4.2. Malaysia

The value of Malaysia government bonds increases from time to time in the recent years, although the increase is not as high as Thailand. In 2000, Malaysia government bonds values around 40 billion USD. In 2009, the value reaches 100 billion dollars. This means, during the last 10 years, the value has only increased 2.5 times (250 percent), a low increase compared to the 7 times increase of Thailand. The value of Malaysia government bonds from 2000 to 2009 is shown in the following Figure 4.4.

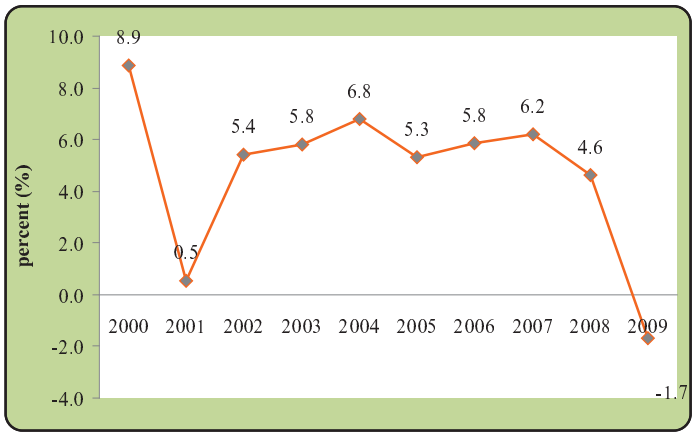
Figure 4.4. Malaysia Government Bonds, 2000-2009



Source: ADB, 2009

The value of the bonds decreases in 2008, but back to hike in 2009. This increase is more likely caused by the 2008 global financial crisis which raises the need of government stimulus package to finance the economy.

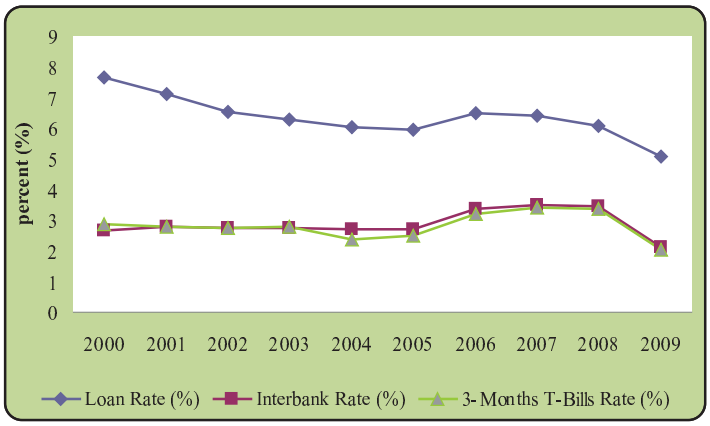
Figure 4.5. Growth of GDP of Malaysia, 2000-2009



Source: ADB, 2009

From 2002 to 2007, Malaysia experiences stable economic growth which is ranging from 6 to 7 percent, but starting from 2008, the growth is plunging to negative value in 2009. This decrease is because of the significant impacts of the global crisis on Malaysia's economy.

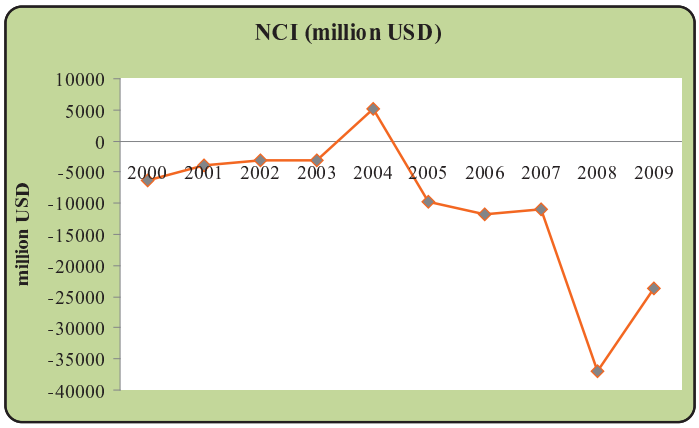
Figure 4.6. Loan Rate, Interbank Rate, and Treasury Bills Rate of Malaysia, 2000-2009



Source: ADB and Bank Negara Malaysia, 2009

Malaysia has stable political condition that keeps the stability of the yield of government bonds. Trend of government bonds yield can be predicted by analyzing rate of several financial assets as shown in Figure 4.6. The rate of Treasury Bills and interbank market is stable in the range of 2 to 4 percent from time to time, while the loan rate tends to decrease and spread between loan rate and both T-Bills and interbank rate is getting smaller. Malaysia also tends to have negative net capital inflow, shown in Figure 4.7, which means there is capital outflow in the period of 2000 to 2009, except in 2009.

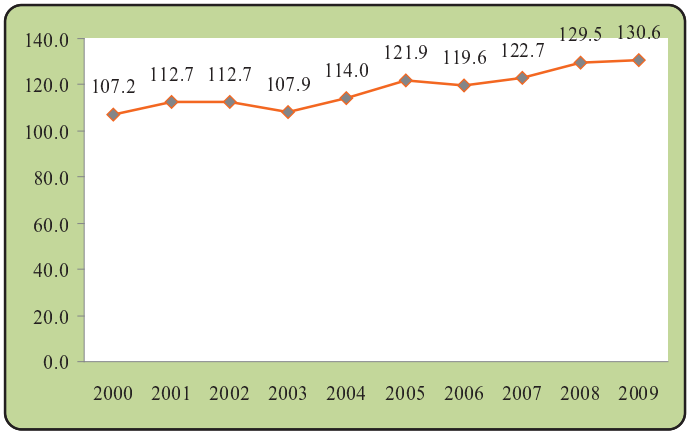
Figure 4.7. NCI of Malaysia, 2000-2009



Source: ADB, 2009

LDR of Malaysia as shown in Figure 4.8 is always above 100 percent in the period of 2000 to 2009. High value of LDR means the bank has tight liquidity.

Figure 4.8. Loans to Deposits Ratio (LDR) of Malaysia, 2000-2009



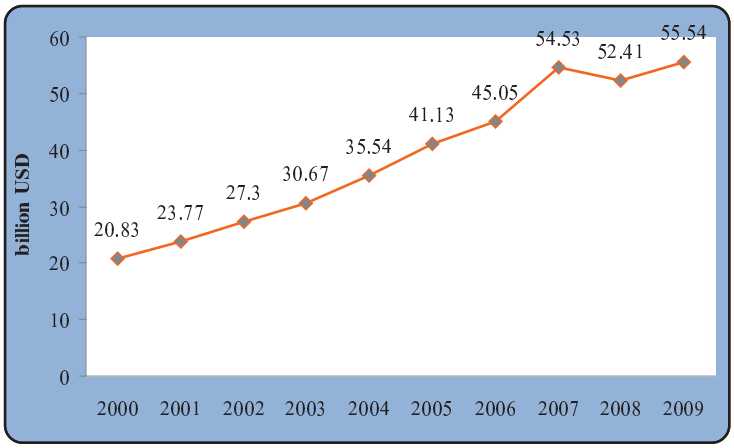
Source: ADB, 2009

4.3. Philippines

Philippines has the lowest value of government bonds among ASEAN-5 countries (Figure 4.9), even the bonds' growth is almost the same as Malaysia. The value is not reaching 60 billion USD, not even half of the value of Thailand. The low issuance of government bonds in Philippines shows that the market for this instrument is still small. However, Philippines has relative high of state budget deficit so the deficit is probably financed by external debt.

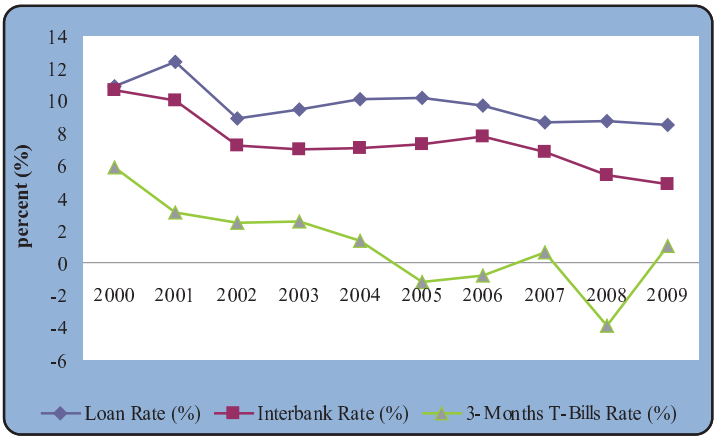
Treasury bills rate of Philippines as risk free assets is far below loan rate and interbank rate (Figure 4.10). In 2008, the value of treasury bills is even negative. Meanwhile, the net capital inflow of Philippines is high, even negative in 2008 and 2009 as impacts of the global crisis (Figure 4.11).

Figure 4.9. Philippines Government Bonds, 2000-2009



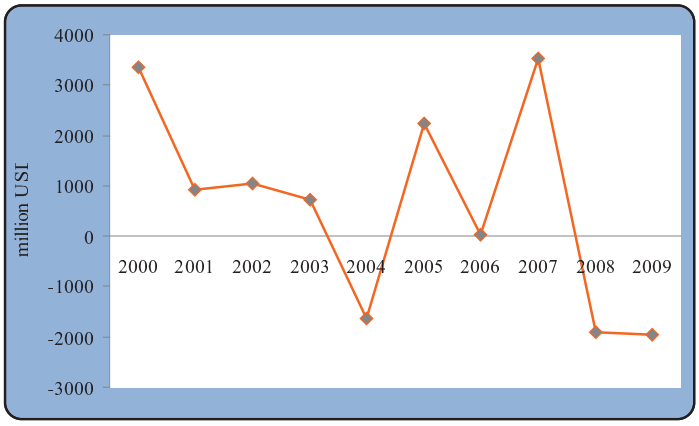
Source: ADB, 2009

Figure 4.10. Loan Rate, Interbank Rate, and Treasury Bills Rate of Philippines, 2000-2009



Source: IFS IMF and Central Bank of the Philippines, 2009

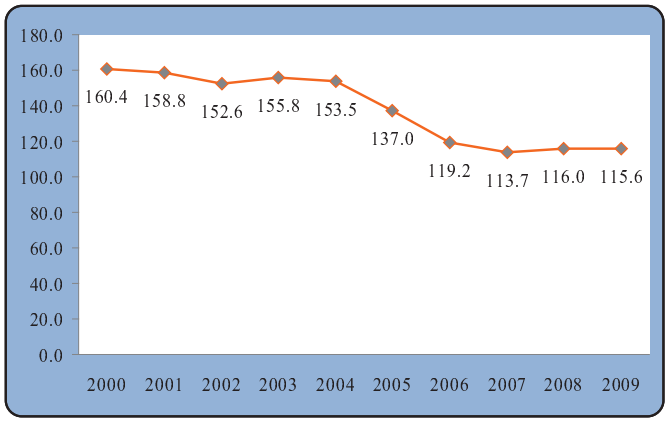
Figure 4.11. NCI of Philippines (million USD), 2000-2009



Source: ADB, 2009

Similar to Malaysia, LDR value of Philippines as shown in figure 4.12 is always above 100 percent in the period of 2000 to 2009. This high value of LDR shows the tight liquidity of banking industry in Philippines.

Figure 4.12. LDR of Philippines, 2000-2009

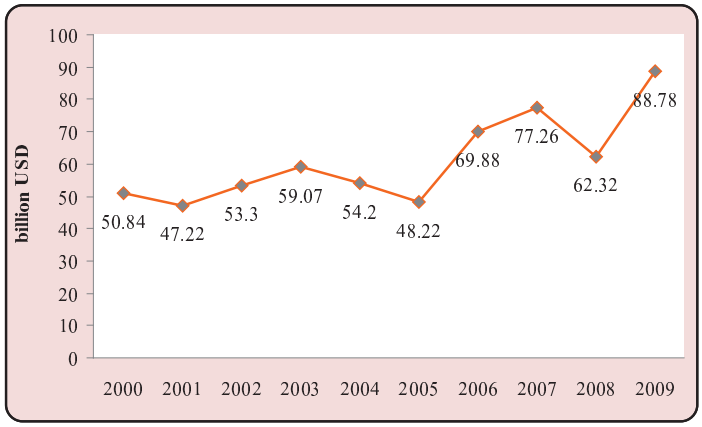


Source: ADB, 2009

4.4. Indonesia

Indonesia has the lowest growth of government bonds value in the period of 2000-2009 among other ASEAN-5 countries (figure 4.13). In the last 10 years, Indonesian government bonds only grow about 80%. The bonds value is about 50 billion USD in 2000 and 90 billion USD in 2009. In 2008, the value declines but recovers in 2009. This increase is driven by continued issuance to fund the government's economic stimulus program.

Figure 4.13. Indonesia Government Bonds, 2000-2009

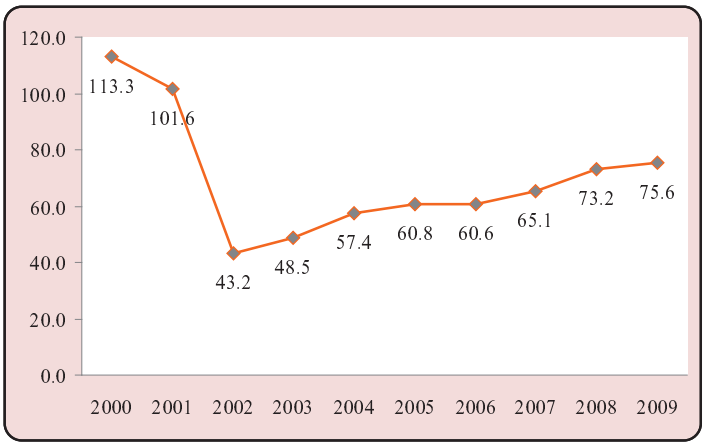


Source: ADB, 2009

In his article on Economics, Chan (April 2010) states some positive aspects of the Indonesian economy which include: (1) the Indonesian economy can withstand the 2008 global crisis; (2) international trade surplus tends to increase; and (3) foreign exchange reserves increases as a result of surplus of trade and capital inflow in recent years, except in 2008. In addition to the aspects of optimism, Indonesian LDR is quite low as shown in figure 4.14. Indonesian LDR keeps increasing from 2002 to 2009, but the value has not reached 80 percent. It means the banking industry has surplus of funds that can be invested in a safe investment, such as

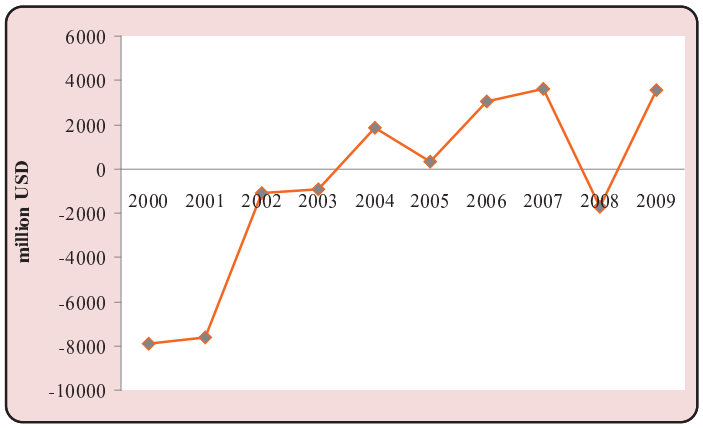
government bonds. The increasing trend of NCI of Indonesia (figure 4.15) might also because of foreign investors are interested in the interest rate offered by Indonesia government bonds.

Figure 4.14. LDR of Indonesia, 2000-2009



Source: ADB, 2009

Figure 4.15. NCI of Indonesia, 2000-2009

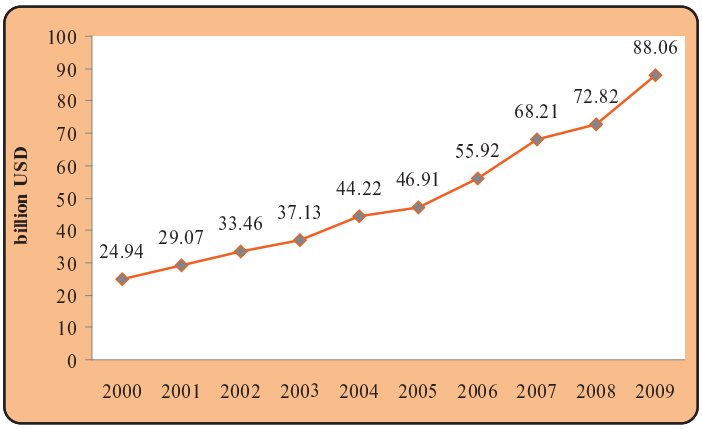


Source: ADB, 2009

4.5. Singapore

Singapore's state budget has not always suffered deficit. However, the Government of Singapore always issues government bonds. This lead to the growth of government bonds of Singapore from time to time. The value of Singapore government bonds during the last 10 years increases rapidly, although not as drastic as Thailand. In 2000, the value is far below Indonesia which is only around 25 of billion dollars, but it increases from year to year, and in 2009 it is almost equal to Indonesia which is about 90 billion dollars.

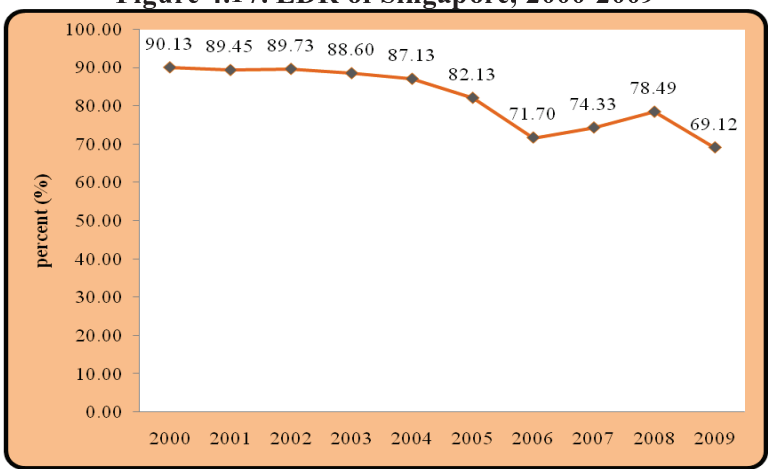
Figure 4.16. Singapore Government Bonds, 2000-2009



Source: ADB, 2009

Singapore LDR from 2000 to 2009 has never exceeded 90 percent (figure 4.17). The LDR even has tendency to decrease. This shows that the banking industry in Singapore has high liquidity.

Figure 4.17. LDR of Singapore, 2000-2009



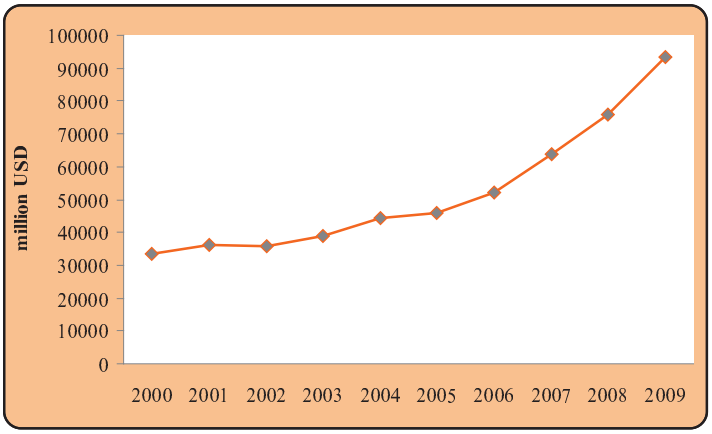
Source: ADB, 2009

Other aspects that drive the increase of government bonds are the high growth of GDP and NCI. Figure 4.18 and 4.19 shows the detailed data of Singapore's GDP growth and NCI during the last 10 years. Figure 4.18 shows that the 2008 global crisis has caused negative growth of GDP, but in the years before, Singapore's GDP growth tends to be high, about 8 percent in average. The low growth in 2008 and 2009 as impacts of the global crisis has forced the government of Singapore to perform stimulus packages that are possibly financing by government bonds.

Figure 4.18. GDP Growth of Singapore, 2000-2009

Source: ADB, 2009

Figure 4.19. NCI of Singapore, 2000-2009



Source: ADB, 2009

V. DATA ANALYSIS

5.1. Variables and Data

This study uses model that is developed from Cebulla and Cuellar (2009). Cebulla and Cuellar provided recent empirical evidence on the impact of the federal budget deficit on the ex ante real interest rate yield on Moody's Baa-rated corporate bonds. They used ex ante real short term interest rate, the M1 money supply, net international capital inflows, and the unemployment rate as variables of their model. Developed from the model, the basic model to be employed in this study will be the following:

$$yield_t = \beta_0 + \beta_1 rgb_t + \beta_2 m1_t + \beta_3 str_t + \beta_4 gpdb_t + \beta_5 nci_t + \varepsilon_t \quad (1)$$

where:

- $yield_t$ is real average interest rate yield (%)
- rgb_t is real net government bond issues (millions of USD)
- $m1_t$ is real M1 money supply (millions of USD)
- str_t is real rate of short term interest rate (%)
- $gpdb_t$ is real growth of Gross Domestic Product (GDP) (%)
- nci_t is real net international of capital flows (total of financial and capital account) (millions of USD)
- ε_t is the error term

This study will use lending rate as proxy of real average interest rate yield (variable $yield_t$) because there are no sufficient data for yield rate of corporate bonds trading. The rates reflect market rates which should be paid by private sector when borrowing funds in the markets. For proxy of real short term rate, this study uses 3 month Bank Indonesia Certificate rate for Indonesia and 91 days Treasury Bills rate for other countries (Malaysia, Philippines, Singapore, and Thailand).

This study covers 5 countries which are Indonesia, Malaysia, Philippines, Singapore, and Thailand. Data analyzed are annually data (2000-2009) compiled from International Financial Statistics IMF, Asian Development Bank, and country sources (central bank, bureau of statistics). The period of 2000-2009 is chosen because for the five countries, in general, government bond has been developing since year of 2000, while the 2008 global financial crisis has been increasing the issuing of government bond.

All data are in national currency, except NCI and RGB which are already in US$. Therefore, data of exchange rate for each country is needed to transform all data in million US$. All data are also in form of real data. Real GDP, NCI, government bond position, and M1 are achieved by dividing them with consumer price index; whereas real inter-bank rate and short term rate are achieved by subtracting them with inflation. Data sources of the variables are summarized in the following table.

Table 5.1. Data Sources of the Variables

Variables	Proxy	Source
$yield_t$	lending rate - percent	IFS IMF, central bank of each country
rgb_t	total bond issued by central government – US$	Asian Bond Monitor ADB
$m1_t$	real M1 money supply – US$	ADB
sbi_t	real short term market rate – percent	IFS IMF, central bank of each country
$gpdb_t$	growth of real GDP - percent	ADB, calculated by researcher
nci_t	net of financial and capital account	ADB, calculated by researcher

5.2. Methodology

Due to data availability, this research uses a panel equation model. The model covers 5 countries (5 cross-sections) and 10 years (10 time series). One reason to use panel data, according to Verbeek (2004) is to analyze pooled individual time series of a number of countries simultaneously. Hsiao (1985, 1986), Klevmarken (1989), and Solon (1989) in Baltagi (2003) list several benefits from using panel data:

1. Panel data suggest that individuals, firms, states or countries are heterogeneous. Time series and cross section studies which are not controlling for this heterogeneity run the risk of obtaining bias results.
2. Panel data give more informative data, more variability, less collinearity among the variables, more degrees of freedom and more efficiency
3. Panel data are better able to study the dynamics of adjustment
4. Panel data are better able to identify and measure effects that are simply not detectable in pure cross-section or pure time series data
5. Panel data models allow us to construct and test more complicated behavioral models than purely cross-section or time-series data
6. Panel data are usually gathered on micro units, like individuals, firms, and households.

Panel model in this study is estimated by two methods: pooled least square (PLS) method and fixed effect method because in the two methods, coefficients of each variable for each country can be provided. The suitable panel model to be applied in this analysis is then determined by using *Redundant Fixed Effects-Likelihood Ratio* test (Eviews User Guide 6, 2007). The hypothesis of *Redundant Fixed Effects-Likelihood Ratio* test is as followed:

H_0: Pooled Least square/PLS (Restricted), if value of $F_{statistic} < F_{table}$ or
value of $F_{statistic}$ Prob. critical value Prob. ($\alpha = 1\%, \alpha = 5\%, \alpha = 10\%$)

H_1: Fixed Effect (Unrestricted), if value of $F_{statistic} > F_{table}$ or
value of $F_{statistic}$ Prob. < critical value Prob. ($\alpha = 1\%, \alpha = 5\%, \alpha = 10\%$)

The *Redundant* test result for the two methods indicates that value of $F_{statistic}$ (2.66) > F_{table} (2.90) or value of $F_{statistic}$ Prob. < critical value Prob. ($\alpha = 10\%$), hence the suitable model for this study is fixed effect model.

Table 5. 2. Redundant Test Result

Redundant Fixed Effect Test **Pool: MODEL 1_FIXED** **Test cross-section fixed effects**			
Effect Test	**Statistic**	**d.f.**	**Prob.**
Cross-section F	2.659642	(4,19)	0.0646

Source: analyzed data

A robust regression can be achieved if the model regressed passes the classic assumption test. Thus, the fixed effect estimation, afterward, are tested by Jarque-Bera normality test, LM autocorrelation test, Ramsey Reset linearity test, and Park heteroscedasticity test. The tests show that the fixed effect estimation is free from specification error, autocorrelation, and heteroscedasticity. Details of the test applied are shown in Appendix.

Based on F test, all independent variables of fixed effect model can explain the dependent variables. From the statistics standpoint, the adjusted R^2 value is 0.844348, meaning that the variables can explain 84.43% of fixed effect model. The F test result of this estimation shows that the five independent variables provide a significant influence on the formation of lending rate, simultaneously. Complete result of data estimation using fixed effect model can be seen in the following table.

Table 5.3. The Result of Panel Estimation of Government Bond's Issuance in ASEAN-5

Variable	**Coefficient**	**t-statistic**
C	3.757163	0.0081*
INDONESIA--RGB	2.206924	0.0398**
MALAYSIA--RGB	-1.248190	0.2271
PHILIPPINES--RGB	2.628627	0.0165**
SINGAPORE--RGB	-0.336396	0.7403
THAILAND--RGB	-0.901234	0.3787
INDONESIA--STR	4.977945	0.0001*
MALAYSIA--STR	3.579066	0.0020*
PHILIPPINES--STR	6.005381	0.0000*
SINGAPORE--STR	5.867743	0.0000*
THAILAND--STR	0.816307	0.4244
INDONESIA--M1	-1.886146	0.0747***
MALAYSIA--M1	0.228937	0.8214
PHILIPPINES--M1	0.527296	0.6041
SINGAPORE--M1	-0.795060	0.4364
THAILAND--M1	-1.012082	0.3242
INDONESIA--GPDB	-1.527955	0.1430
MALAYSIA--GPDB	0.280717	0.7820
PHILIPPINES--GPDB	0.045339	0.9643
SINGAPORE--GPDB	-2.007362	0.0591***
THAILAND--GPDB	-2.079713	0.0513***
INDONESIA--NCI	3.426282	0.0028*
MALAYSIA--NCI	-0.398075	0.6950
PHILIPPINES--NCI	0.135126	0.8939
SINGAPORE--NCI	0.634223	0.5335
THAILAND--NCI	-3.009931	0.0072*

Source: analyzed data

Note: significance: *=1%, **=5%, ***=10%

Government bond issuance has no significant impact on lending rate for Malaysia, Singapore, and Thailand. Positive and significant impact of bond issuance on lending rate occurs in Indonesia and Philippines, meaning the rise of government bond issuance will raise the lending rate. It can be said that during period of 2000 to 2009, the government bond issuance in the two countries leads to rising interest rate which then could lead to crowding out. It indicates that financing government deficit in Indonesia and Philippines by issuing debt instrument in the financial market has negative impact on lending rate. Tseng (2000) explains in his paper, based on the IS-LM curve approach, that if federal deficits increase, the supply of government securities will increase, the prices of government securities will decrease, and the interest rate will rise.

For Malaysia, Singapore, and Thailand, the debt market rates may depend on international financial market more than domestic financial market, given the situation of globalization and integration among world's financial markets nowadays. It should be noted also that in Malaysia, Singapore, and Thailand, there may be a lot of big enterprises and companies that have much liquidity of money so they need not to borrow money. Another reason of no evidence of rising interest rate in the three countries is that their market for government bonds is big and deep so that the capacity to absorb government bond issuance is higher. Therefore, the impact of government bond issuance on interest rate is not high.

The M1 money supply also does not have significant influence on lending rate for Malaysia, Philippines, Singapore, and Thailand, while the variable has negative impact on the rate for Indonesia. As the government increases the M1 money supply, price of interest rate in financial market will be cheaper thus an increase of M1 will decrease lending rate. Variable of short term rate has significant positive impact on lending rate for all countries, except Thailand. Treasury Bills and Bank Indonesia Certificate as proxy for this variable are considered as the safest money market instrument to invest. Hence, if the instrument's rate increases, rate of other instrument will rapidly follows. For Singapore and Thailand, the lending rate will also increase if the economy is having high growth. The higher an economy grows, the wealthier it is assumed, attracting more investors to invest on it so demand for money increases and short term interest rate increases. Finally, the panel estimation also shows that an increase of the net capital inflow will lead to the increase of yield as it is evident in Indonesia and Thailand.

VI. CONCLUSION

The empirical study shows that the rising interest rate as impacts of government debt issuance is evident only in Indonesia and Philippines during period of 2000 until 2009. It indicates that increasing state budget deficit by issuing more debt instruments in the market in the two countries will increase lending rate. The result shows that there is a limit on the capacity of the financial market to absorb debt instruments. The government of Indonesia and Philippines should manage its debt issuance better by considering the capacity of the market to absorb the debt instruments without creating negative influence on the private sector.

However, for Malaysia, Singapore, and Thailand, the phenomenon of rising interest rate as impacts of government debt issuance is not occurred. Several reasons can explain this finding: 1) the value of government debt or government debt per GDP of the three countries during the period of this study is relatively small compared to market liquidity, thus the government bond issuance does not have significant effect on market, so the lending rate is not significantly affected; 2) there may be a lot of big enterprises and companies that have much liquidity of money in the three countries, so they need not to borrow money; and 3) the three countries' market for government bonds is big and deep so that the capacity to absorb government bond issuance is higher and the impact of government bond issuance to interest rate is not high.

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APPENDIX

1. Panel Fixed Effects Model

Dependent Variable: YIELD?
Method: Pooled Least Squares
Date: 03/18/11 Time: 02:53
Sample: 2000 2009
Included observations: 10
Cross-sections included: 5
Total pool (unbalanced) observations: 49

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.757163	1.269791	2.958882	0.0081
INDONESIA--RGB	0.011250	0.005097	2.206924	0.0398
MALAYSIA--RGB	-0.003251	0.002605	-1.248190	0.2271
PHILIPPINES--RGB	0.020685	0.007869	2.628627	0.0165
SINGAPORE--RGB	-0.001044	0.003104	-0.336396	0.7403
THAILAND--RGB	-0.001566	0.001737	-0.901234	0.3787
INDONESIA--STR	0.903742	0.181549	4.977945	0.0001
MALAYSIA--STR	1.236870	0.345585	3.579066	0.0020
PHILIPPINES--STR	1.051060	0.175020	6.005381	0.0000
SINGAPORE--STR	0.821517	0.140006	5.867743	0.0000
THAILAND--STR	0.273871	0.335500	0.816307	0.4244
INDONESIA--M1	-0.000146	7.73E-05	-1.886146	0.0747
MALAYSIA--M1	1.46E-08	6.40E-08	0.228937	0.8214
PHILIPPINES--M1	7.71E-05	0.000146	0.527296	0.6041
SINGAPORE--M1	-5.47E-08	6.88E-08	-0.795060	0.4364
THAILAND--M1	-0.000121	0.000119	-1.012082	0.3242
INDONESIA--GPDB	-0.794905	0.520241	-1.527955	0.1430
MALAYSIA--GPDB	0.041646	0.148355	0.280717	0.7820
PHILIPPINES--GPDB	0.008473	0.186881	0.045339	0.9643
SINGAPORE--GPDB	-0.176284	0.087819	-2.007362	0.0591
THAILAND--GPDB	-0.422506	0.203156	-2.079713	0.0513
INDONESIA--NCI	0.041490	0.012109	3.426282	0.0028
MALAYSIA--NCI	-0.002197	0.005518	-0.398075	0.6950
PHILIPPINES--NCI	0.003039	0.022493	0.135126	0.8939
SINGAPORE--NCI	0.002516	0.003966	0.634223	0.5335
THAILAND--NCI	-0.020694	0.006875	-3.009931	0.0072
Fixed Effects (Cross)				
INDONESIA--C	0.135663			
MALAYSIA--C	1.111268			
PHILIPPINES--C	-6.609360			
SINGAPORE--C	1.879720			
THAILAND--C	3.869678			

R-squared	0.938388	Mean dependent var	4.611000
Adjusted R-squared	0.844348	S.D. dependent var	2.111361
S.E. of regression	0.832990	Akaike info criterion	2.749518
Sum squared resid	13.18358	Schwarz criterion	3.907776
Log likelihood	-37.36320	Hannan-Quinn criter.	3.188960
F-statistic	9.978625	Durbin-Watson stat	2.289235
Prob(F-statistic)	0.000001		

Source: Analyzed Data

Mathematical equation of Panel Fixed Effects Model:

YIELD_INDONESIA = 3.89826 + 0.0112496779374*RGB_INDONESIA + 0.903741605681*STR_INDONESIA - 0.000145817198354*M1_INDONESIA - 0.794905219925*GPDB_INDONESIA + 0.0414901344438*NCI_INDONESIA

YIELD_MALAYSIA = 4.86843 - 0.0032511253613*RGB_MALAYSIA + 1.23686971004*STR_MALAYSIA + 1.46497942392e-08*M1_MALAYSIA + 0.0416457187346*GPDB_MALAYSIA - 0.00219672132879*NCI_MALAYSIA

YIELD_PHILIPPINES = -2.85221 + 0.0206849276961*RGB_PHILIPPINES + 1.05106034071*STR_PHILIPPINES + 7.71380609959e-05*M1_PHILIPPINES + 0.00847299546894*GPDB_PHILIPPINES + 0.00303942321587*NCI_PHILIPPINES

YIELD_SINGAPORE = 5.63688- 0.00104*RGB_SINGAPORE + 0.821*STR_SINGAPORE – 0.0000000546*M1_SINGAPORE - 0.176*GPDB_SINGAPORE + 0.0025*NCI_SINGAPORE

YIELD_THAILAND = 7.62684 - 0.001565*RGB_THAILAND + 0.27387*STR_THAILAND - 0.0001208*M1_THAILAND - 0.42250*GPDB_THAILAND - 0.0206*NCI_THAILAND

2. Normality Test

DESKRIPTIF STATISTIK	RESID_ INDONESIA	RESID_ MALAYSIA	RESID_ PHILIPPINES	RESID_ SINGAPORE	RESID_ THAILAND
Mean	0.026239	-0.030757	0.094553	0.019797	-8.64E-17
Median	-0.273146	-0.000492	0.002942	0.093494	0.002119
Maximum	1.577057	0.150607	0.995314	0.639852	0.908554
Minimum	-0.971209	-0.392911	-0.587551	-0.641638	-0.599185
Std. Dev.	0.857608	0.180838	0.514376	0.497542	0.494215
Skewness	0.622279	-0.836886	0.255199	-0.143939	0.484551
Kurtosis	2.140373	2.718238	2.302515	1.607119	2.348997
Jarque-Bera	**0.857956**	**1.080339**	**0.280121**	**0.758622**	**0.511111**
Probability	**0.651174**	**0.582650**	**0.869305**	**0.684333**	**0.774486**
Sum	0.236149	-0.276811	0.850977	0.178175	-8.88E-16
Sum Sq. Dev.	5.883931	0.261618	2.116662	1.980383	1.953985
Observations	9	9	9	9	9

Source: Analyzed Data

The table of normality test shows that residual value from all cross section has normal distribution as the value of Jarque-Bera probability for Indonesia's residual (65.11%) > statistical probability (α = 10%), the value of Jarque-Bera probability for Malaysia's residual (58.26%) > statistical probability (α = 10%), the value of Jarque-Bera probability for Philippines' residual (86.93%) > statistical probability (α = 10%), the value of Jarque-Bera probability for Singapore's residual (68.43%) > statistical probability (α = 10%), and the value of Jarque-Bera probability for Thailand's residual (77.44%) > statistical probability (α = 10%) .

4. Autocorrelation Test

The Breusch-Godfrey Serial Correlation LM test is used in this study to detect autocorrelation. Hypothesis of LM test is as followed:

- If value of χ^2 (Obs*R-squared) > value of χ^2_{table} (Obs*R-squared) or probability value of χ^2_{hitung} < statistical probability ($\alpha = 5\%$), hypothesis of autocorrelation is accepted
- If χ^2 (Obs*R-squared) < nilai χ^2_{table} (Obs*R-squared) or probability value of χ^2 > statistical probability ($\alpha = 5\%$), hypothesis of autocorrelation is rejected

Result of LM Test Estimation:

Dependent Variable: RESID?
Method: Pooled Least Squares
Sample (adjusted): 2001 2009
Cross-sections included: 5
Total pool (unbalanced) observations: 44

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.186724	2.492682	-0.074909	0.9419
INDONESIA--RGB	0.013666	0.012177	1.122238	0.2908
MALAYSIA--RGB	0.001771	0.003686	0.480454	0.6424
PHILIPPINES--RGB	-0.005960	0.008647	-0.689326	0.5080
SINGAPORE--RGB	-0.002384	0.003919	-0.608248	0.5581
THAILAND--RGB	0.008427	0.005987	1.407566	0.1928
INDONESIA--STR	-0.184915	0.252686	-0.731797	0.4829
MALAYSIA--STR	-0.257027	0.516757	-0.497384	0.6308
PHILIPPINES--STR	0.047294	0.207798	0.227597	0.8250
SINGAPORE--STR	-0.099532	0.171766	-0.579463	0.5765
THAILAND--STR	-0.626298	0.621620	-1.007524	0.3400
INDONESIA--M1	-0.000201	0.000166	-1.213244	0.2559
MALAYSIA--M1	-1.49E-09	7.85E-08	-0.018941	0.9853
PHILIPPINES--M1	-0.000171	0.000190	-0.900105	0.3915
SINGAPORE--M1	-4.07E-08	8.07E-08	-0.504282	0.6262
THAILAND--M1	-0.054313	0.035328	-1.537414	0.1586
INDONESIA--GPDB	1.043821	1.007001	1.036563	0.3270
MALAYSIA--GPDB	-0.086128	0.196347	-0.438651	0.6713
PHILIPPINES--GPDB	-0.137802	0.294257	-0.468306	0.6507
SINGAPORE--GPDB	-0.009423	0.095383	-0.098791	0.9235
THAILAND--GPDB	-0.116789	0.298973	-0.390633	0.7052
INDONESIA--NCI	-0.056230	0.043894	-1.281030	0.2322
MALAYSIA--NCI	0.004876	0.009070	0.537638	0.6039
PHILIPPINES--NCI	0.026672	0.030266	0.881243	0.4011
SINGAPORE--NCI	-0.000455	0.004283	-0.106146	0.9178
THAILAND--NCI	-0.014671	0.014641	-1.002093	0.3425
RESID_INDONESIA(-1)	0.791463	0.819653	0.965607	0.3595
RESID_MALAYSIA(-1)	0.235365	2.072839	0.113547	0.9121
RESID_PHILIPPINES(-1)	0.081719	0.948677	0.086140	0.9332
RESID_SINGAPORE(-1)	-0.857277	0.861027	-0.995646	0.3454
RESID_THAILAND(-1)	-1.367670	1.343118	-1.018280	0.3351

R-squared	0.476092	Mean dependent var	0.022418
Adjusted R-squared	-1.503118	S.D. dependent var	0.534249
S.E. of regression	0.845249	Akaike info criterion	2.505573
Sum squared resid	6.430013	Schwarz criterion	3.924815
Log likelihood	-20.12261	Hannan-Quinn criter.	3.031896
F-statistic	0.240546	Durbin-Watson stat	2.517020
Prob(F-statistic)	0.998891		

Source: Analyzed Data

The table of LM test shows that value of Obs*R-squared/value of χ^2 (0.476092*44= 20.948) < value of $\chi^2_{\text{-tablel}}$ (df=5, α = 5%; 11,07). It indicates that the fixed effect model has no autocorrelation.

5. Hetoeroscedasticity Test

Test of heteroscedasticity in this study is conducted by using Park Test. The Park Test is generated by estimating value of residual square with all independent variables. Role of thumb of Park Test is as followed:

- If value of residual t-statistic < value of t-table, the model has no heteroscedasticity symptom, or
- If value of residual ρ_statistic > ρ_critical value, the model has no heteroscedasticity symptom

Result of Park Test Estimation:

Dependent Variable: RESID?^2
Method: Pooled Least Squares
Date: 03/18/11 Time: 09:46
Sample: 2000 2009
Included observations: 10
Cross-sections included: 5
Total pool (unbalanced) observations: 49

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INDONESIA--RGB	0.002804	0.001540	1.820653	0.0812
MALAYSIA--RGB	-8.49E-05	0.000910	-0.093373	0.9264
PHILIPPINES--RGB	2.71E-05	0.001594	0.017029	0.9866
SINGAPORE--RGB	-3.25E-05	0.001044	-0.031141	0.9754
THAILAND--RGB	3.35E-05	0.000323	0.103857	0.9181
INDONESIA--STR	0.003979	0.100536	0.039582	0.9688
MALAYSIA--STR	0.031822	0.189289	0.168111	0.8679
PHILIPPINES--STR	0.080975	0.073136	1.107187	0.2792
SINGAPORE--STR	-0.019221	0.081044	-0.237172	0.8145
THAILAND--STR	0.042512	0.186970	0.227372	0.8221
INDONESIA--M1	-3.08E-05	3.70E-05	-0.832506	0.4133
MALAYSIA--M1	-1.28E-09	2.52E-08	-0.050900	0.9598
PHILIPPINES--M1	-4.09E-05	7.51E-05	-0.544426	0.5912
SINGAPORE--M1	-2.17E-09	2.79E-08	-0.077715	0.9387
THAILAND--M1	-9.24E-06	3.93E-05	-0.235343	0.8159
INDONESIA--GPDB	-0.136742	0.142026	-0.962796	0.3453
MALAYSIA--GPDB	0.007695	0.050184	0.153330	0.8794
PHILIPPINES--GPDB	0.053795	0.104626	0.514168	0.6118
SINGAPORE--GPDB	0.025870	0.038535	0.671346	0.5084
THAILAND--GPDB	0.043732	0.048268	0.906031	0.3739
INDONESIA--NCI	0.005333	0.006378	0.836179	0.4113
MALAYSIA--NCI	-0.000325	0.003173	-0.102491	0.9192
PHILIPPINES--NCI	-0.004230	0.012911	-0.327606	0.7461
SINGAPORE--NCI	-0.000556	0.002158	-0.257644	0.7989
THAILAND--NCI	0.000357	0.003881	0.092093	0.9274

Source: Analyzed Data

The table of Park Test shows that all independent variables have no significant impact on variable of residual square as probability value of independent variables > probability of α = 5%. It is evident that the model in this study has no heteroscedasticity symptom.