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What are the next steps for bond market development in Thailand ?

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Agenda for the Next Step for Thailand Bond Market

1. Introduction & Motivation
2. Bond Market Development
3. Thai Domestic and Int'l Bond Markets
4. The Behavior of Thai Bonds and Credit Spreads
5. Conclusions

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1. Asian Bond Market Introduction

To reduce heavily dependency on Bank funding channel and stock market venture, after the 1997 crisis East Asian policymakers' financial market vision encompasses :

1. An enhanced but not necessarily integrated series of domestic bond market,
2. A regional Bond Market denominated in regional currencies for regional integration and
3. A global Market where national bond markets are developed with ultimate goal of global financial integration and foreign participation.

See more discussion by McCauley and Park (2006)

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1. Asian Bond Market Introduction

Enhancing global integration requires

- greater foreign participants in the domestic market like the issuance activities of Multilateral Dev't Banks (Burger Warnock 2006a),
- foreign corporation (Batten and Szilagyi 2007),
- foreign investors (Bae, Yun and Bailey 2006) and
- an expanded role for domestic issuers in int'l market.

The objective of this study is to investigate some of the key empirical evidences of Thai Int'l bond issues that may enhance or impede their appeal in int'l market in the spirit of Burger and Warnock 2006a.

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2. Asian Bond Market Dev't

Highlights of Asian Bond Market Development are

1. **On the supply side:** scale and scope of the bond issuance, local vs non-local currency denomination, derivative products..
2. **On the demand side:** the role of institutional and retail investors and mutual funds, currency/maturity matching..
3. **On the institutional infrastructure issues:** corporate governance reform, enforceable regulatory framework, trading platform, quality settlement, liquid, breath and depth market microstructure, risk management...

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II. Exhibition 1 :Non-Japan Asia growth forecasts Ongoing Infrastructure Needs.

	2005	CS forecasts as of December 2005		CS forecasts as of March 2006		Consensus	
		2006F	2007F	2006F	2007F	2006F	2007F
China	9.9	10.1	9.7	10.1	9.7	9.1	8.7
Hong Kong	7.3	4.4	3.6	5.0	3.8	5.3	4.5
India	8.1	8.5	8.5	8.5	8.5	7.3	na
Indonesia	5.6	4.7	5.2	5.0	6.0	5.1	5.5
Korea	4.0	4.4	3.7	4.7	4.2	5.0	4.7
Malaysia	5.3	5.4	5.1	5.4	5.1	5.4	5.2
Philippines	5.1	5.3	5.6	5.3	5.6	4.7	4.7
Singapore	6.4	6.0	5.0	7.0	6.0	6.0	5.2
Taiwan	4.1	4.9	4.7	4.9	4.0	4.1	4.1
Thailand	4.5	4.7	5.2	4.7	4.0	4.5	4.0
Asia-10 (average)	6.0	5.8	5.6	6.1	5.8	5.7	5.3
Asia-10 (average weighted)	7.5	7.6	7.3	7.7	7.4	7.1	5.8

Data for 10 non-Japan Asian countries weighted by the countries' 2005 GDP levels.
Source: CEIC, Asia Pacific Consensus Forecasts March 2006, Credit Suisse

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II. What is so interesting about Asia-Pacific bond markets?

The 1997 financial crisis gave a major boost to regional and domestic bond markets across East Asia as alternatives to bank intermediation- there is enormous impetus for change!

Bond Markets in Asia-Pacific
(in US\$ billions)

	1997				2005			
	Government	Corporate	Financial	Total % of GDP	Government	Corporate	Financial	Total % of GDP
China	67.4	6.3	42.7	116.4 12.9	331.8	12.2	208.0	552.0 31.5
Hong Kong	13.1	32.7	45.8	26.4	16.0	66.9	82.9	48.7
Indonesia	0.9	2.0	1.7	4.6 1.9	48.5	3.8	2.9	55.2 20.6
Korea	21.6	57.1	51.7	130.4 25.1	183.5	155.0	261.3	599.8 81.0
Malaysia	19.4	20.8	16.8	57.0 56.4	49.2	45.6	20.3	115.1 93.2
Philippines	16.6	0.3	16.9	20.5	35.8	0.1	0.2	36.1 39.4
Singapore	13.0	10.7	23.7	24.9	45.1	34.5	79.6	71.4
Thailand	0.3	9.0	1.1	10.5 6.6	34.7	22.6	14.8	72.1 42.3
Vietnam					4.3			4.3 10.0
Japan	2,383	578	1,650	4,608 116	6,929	836	1,516	9,281 187
US	4,452	1,889	5,528	11,870 143	5,697	2,659	11,192	19,548 158

Sources: Asian Development Bank, Dealogic Bondware, Bank for International Settlements.

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II. What is so interesting about Asia-Pacific bond markets?

In several countries, including Korea and Malaysia, the size of the corporate bond market has even caught up with that in the US as a percentage of GDP. But the development of bond market is disparate.

Bond Markets in Asia-Pacific
(in US\$ billions)

	1997				2005			
	Government	Corporate	Financial	Total % of GDP	Government	Corporate	Financial	Total % of GDP
China	67.4	6.3	42.7	116.4 12.9	331.8	12.2	208.0	552.0 31.5
Hong Kong	13.1	32.7	45.8	26.4	16.0	66.9	82.9	48.7
Indonesia	0.9	2.0	1.7	4.6 1.9	48.5	3.8	2.9	55.2 20.6
Korea	21.6	57.1	51.7	130.4 25.1	183.5	155.0	261.3	599.8 81.0
Malaysia	19.4	20.8	16.8	57.0 56.4	49.2	45.6	20.3	115.1 93.2
Philippines	16.6	0.3	16.9	20.5	35.8	0.1	0.2	36.1 39.4
Singapore	13.0	10.7	23.7	24.9	45.1	34.5	79.6	71.4
Thailand	0.3	9.0	1.1	10.5 6.6	34.7	22.6	14.8	72.1 42.3
Vietnam					4.3			4.3 10.0
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Table 1a : The Importance of Legal Rights and Investor Protection

Country	Borrowers and lenders legal rights index	Contract enforcement time (days)	Contract enforcement cost (as percentage of debt)	Length of bankruptcy process (years)	Bankruptcy costs (as percentage of estate)
China	2	241	25.5	2.4	18
India	4	425	43.1	10	8
Korea	6	75	5.4	1.5	4
Malaysia	8	300	20.2	2.3	18
Thailand	5	390	13.4	2.6	38
Asia	5	286	22	4	17
Mature markets	7	165	9	2	7

Source: IMF (2005), Chapter IV on "Recent Trends in Corporate Finance", Global Financial Stability Report, April.

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Table 1b : The Importance of Legal Rights and Investor Protection

Country	Accounting standards	Rule of law	Judicial efficiency	Contract repudiation	Expropriation risk
India	5.7	4.2	8	6.1	7.8
Korea	6.2	5.4	6	8.6	8.3
Malaysia	7.6	6.8	9	7.4	8
Thailand	6.4	6.3	3.3	7.6	7.4
Asia	6.5	5.7	6.6	7.4	7.9
G-3	6.6	9.4	9.7	9.5	9.9

Source: IMF (2005), Chapter IV on "Recent Trends in Corporate Finance", Global Financial Stability Report, April.

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Table 2 a Obstacles to Bond Market Dev't

Some selected **legal** impediment issues are as follows:

1. Obstacles - limits to collateral rights in bankruptcy; impact of **capital control** on cross-border investment, reinvestment, capital repatriation..
2. Omissions - Recognition of ISDA master agreements and definitions; permissible set-off and netting swap and derivative..
3. Disparities - Uncertainty in priority of claim and secure title, Rules of usury, conflicts of law..

See more Lejot, Amer and Qiao 2006

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Table 2 b Obstacles to Bond Market Dev't

Some selected **Fiscal** Impediment issues are:

1. Obstacles - Duties, Taxes and penalties imposed upon transfer of financial asset and claims; securities financing by repurchase, claim between SPVs and sale of asset..
2. Omissions - Absence of commitments to tax neutrality for securities..
3. Disparities -Withholding taxes and other imposts applied asymmetrically to different investor groups..

See more Lejot, Amer and Qiao 2006

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Table 2 c Obstacles to Bond Market Dev't

Some selected **regulatory** impediment issues are :

1. Obstacles - Prohibitions and constraints on issuers , initial and ongoing disclosure requirement..
2. Omissions – Lack of regulatory oversight, quality and reliability of mandatory issuer disclosure requirement, incomplete practice framework for derivative..
3. Disparities – Variation in rating requirement; non-standardized practices; guaranteed by third party..

See more Lejot, Amer and Qiao 2006

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Table 2d Obstacles to Bond Market Dev't

Some selected systemic impediment issues are :

1. Obstacles - Limits on access to money market, restrictions on settlement or custody, short sales prohibition..
2. Omissions – Absence of declared or consistent benchmark issuance programs; coordination between national debt management strategy and monetary policy..
3. Disparities – Variation in settlement practice; gov't issue primary dealer qualification, requirements..

See more Lejot, Amer and Qiao 2006

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3. Thai Domestic and Int'l Bond Markets

Underdevelopment in Bond Market - The ratio of total bond outstanding relative to GDP of 38% for emerging market, comparing to 105% for the world. To further develop..

1. For capital market imperfection in emerging country, **it is vital to pursue a policy both bank and bond market reform.**
2. **Focus on risk transformation and intermediation activities** such as asset securitization or property fund.
3. **Financing mega-project** may be done through securitized bank loans guaranteed by third parties MTBs (e.g. ADB, World Bank, ect).
4. For enhancing market completeness, the development of **floating rate domestic instruments** are required.

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Table 3: Domestic and International Bond Markets in Thailand and the Asia Pacific Region

	Total Bonds Outstanding		Local Currency Bonds Outstanding		Total Bonds
	(\$ billions)	(% in world bond market)	(\$ billions)	(% in world bond market)	
Emerging Markets	2,183	7.0	38	1,652	76
Latin America	596	1.9	34	314	53
Emerging Asia	1,124	3.6	40	1,013	90
China	329	1.1	28	316	96
India	141	0.5	23	137	28
Indonesia	50	0.2	34	48	33
Korea	325	1.0	77	281	86
Malaysia	89	0.3	101	73	82
Pakistan	27	0.1	44	27	100
Philippines	32	0.1	45	16	50
Thailand	43	0.1	37	35	81
Taiwan	89	0.3	32	82	92
Financial Centers	91	0.3	36	55	61
Hong Kong	44	0.1	27	23	53
Singapore	46	0.1	54	32	69
Emerging Europe	227	0.7	31	138	61
Other Emerging	146	0.5	56	132	90
World	31,168	100	105	28,711	92

(Source: Burger and Warnock, 2006b)

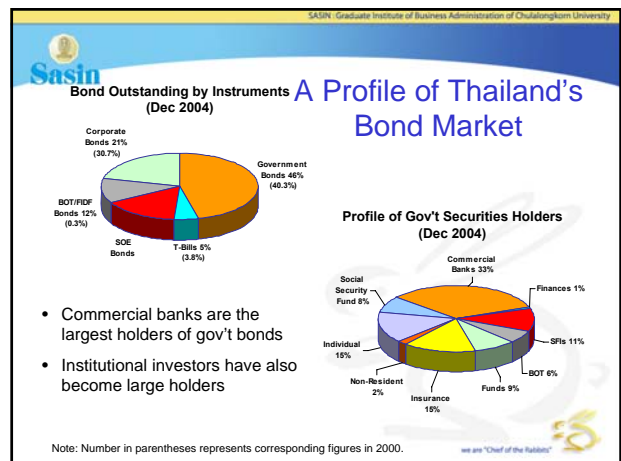
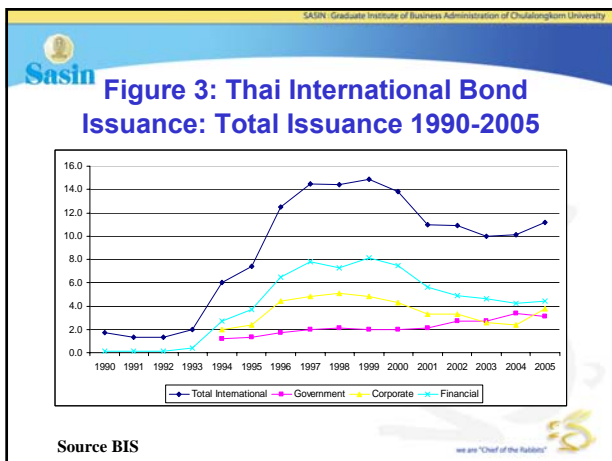
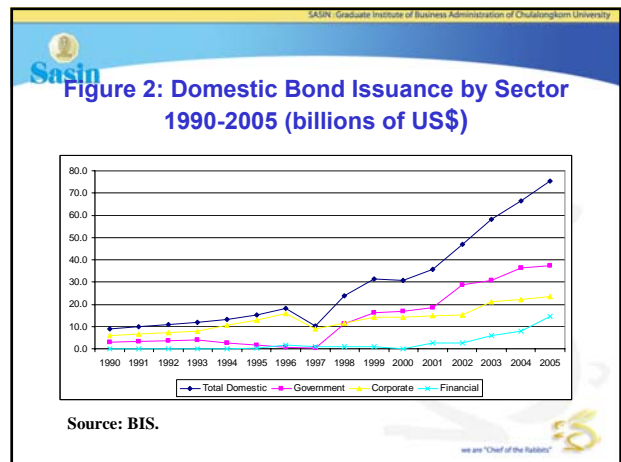
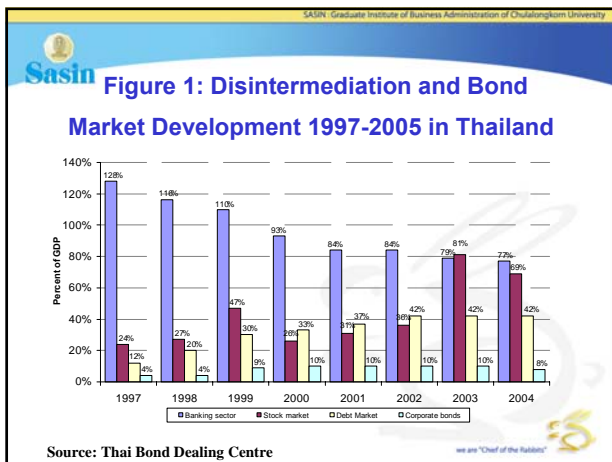
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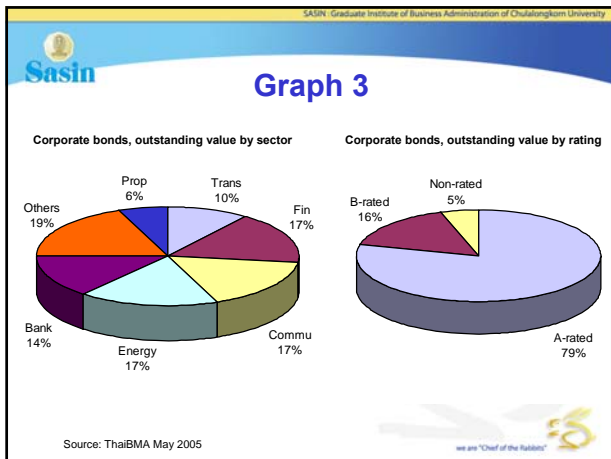
Table 4: The Mean, Variance, and Skewness of Historical Returns in Thailand and the Asia Pacific Region

	Unhedged US\$ Returns			Hedged US\$ Returns		
	Mean	Variance	Skewness	Mean	Variance	Skewness
Emerging Markets	0.004	0.809	-0.95	0.076	0.431	-1.35
Latin America	-0.041	1.048	-1.62	0.049	0.665	-1.89
Emerging Asia	0.073	0.926	-0.59	0.088	0.399	-1.00
China	0.096	0.043	0.70	0.096	0.043	0.68
India	0.077	0.037	-1.43	0.119	0.024	-0.92
Indonesia	-0.168	3.245	0.28	-0.081	1.370	-0.94
Korea	0.208	0.753	-2.86	0.144	0.227	-1.76
Malaysia	0.104	0.615	0.13	0.098	0.352	-0.38
Philippines	0.037	0.739	-1.05	0.100	0.321	-2.28
Thailand	0.160	1.048	0.07	0.143	0.454	-1.44
Financial Centers	0.052	0.041	0.12	0.092	0.027	-0.35
Hong Kong	0.107	0.042	-0.02	0.109	0.041	-0.01
Singapore	-0.003	0.040	0.26	0.076	0.013	-0.69
Emerging Europe	-0.077	0.567	-0.62	0.084	0.233	-0.78
Other Emerging	-0.007	0.696	-1.46	0.092	0.427	-2.55
World ex US	0.006	0.483	-0.20	0.072	0.240	-0.92

Source: Burger and Warnock, 2006

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A Profile of Thailand's Bond Market

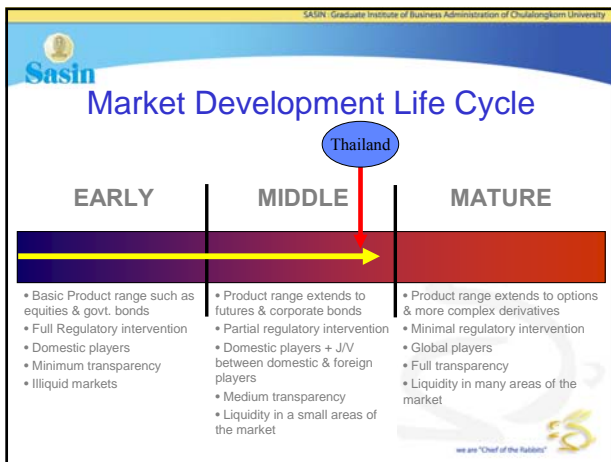
Daily trading volume in secondary market

Unit: Billion Baht

	2001	2002	2003	2004	2005Q1
1. Government Bonds	3,725	4,805	4,674	4,305	5,058
2. Treasury Bills	1,426	2,861	2,343	3,777	4,813
3. State Enterprise Bonds	571	463	411	431	309
4. BOT Bonds / FIDF	379	259	2,257	3,139	6,173
5. Corporate Bonds	371	368	867	466	377
Total	6,472	8,755	10,553	12,120	16,731

Source: Thai Bond Dealing Centre

- Daily trading volume has increased since 2001
- However, trading volume of government bond has decreased in the past 2 years
- Turnover ratio has also declined in 2004 (next slide)



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- ### BoT Intervention on THB, Current Thai Capital Control & Impact on Bond Market
- Since Jan 06, BoT has issued over THB 1 trillion bond (190% growth yoy) to absorb liquidity and to slow down THB appreciation (unsuccessfully).
 - On Dec. 18, 06, BoT has imposed capital control with 30 pct withholding measure for unwanted incoming capital.

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- ### BoT Intervention on THB, Current Thai Capital Control & Impact on Bond Market
- Daily Bond trading surge 160% yoy.
 - But BoT intervention does not represent the real demand. Inverse or flat yield curve is frequently shown; downward yield shift across maturity by 83 to 123 bp.
 - Private Bond issue is dropped by 78% yoy.
 - SEO bond issue is dropped by 22% yoy.
 - On Dec 18, 06, Bot imposed capital control. Non-resident trade account has become less than 2% of daily trade. (Stock market was plunged as much as 20% in one day)
 - With aggressive THB rate cut policy now, the private bond may be expected to raise for re-financing despite the obvious slowdown in its economy.

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Table 5: The Variance and Skewness of Thai Gov't Int'l Bonds Denominated in Yen and US Dollars

Foreign Bond Issue (Maturity Date, Coupon and Currency)	Average Monthly Return	Average Monthly Variance	Average Monthly Skewness	Source: Bloomberg (B) Reuters (R)
THAILAND KINGDOM 03/27/2006 3.35% JPY	0.000	0.858	0.737	B
THAILAND KINGDOM 12/20/2006 2.85% JPY	0.000	0.793	0.629	B
THAILAND KINGDOM 12/21/2006 1.13% JPY	0.000	0.816	0.666	B
THAILAND KINGDOM 12/19/2008 1.70% JPY	0.001	0.703	0.494	B
THAILAND KINGDOM 4/15/2007 7.75% USD	0.002	0.769	0.592	B
THAILAND KINGDOM 9/30/2013 7.07% USD	0.003	1.024	1.049	R

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CONCRETE ECONOMIC MODELING SUGGESTION

$$\Delta \text{CSP}_{t,i,\tau} = \lambda + \beta'_{i,\tau} F_t + \varepsilon_{t,i,\tau}$$

time country maturity

- 1) Only use "duration matched" spreads
→ 9 series of weekly data
- 2) Pool all data
 - 9 bonds
 - 5 countries
- 3) Put structure on error terms
→ efficiency
→ common regional factor?
- 4) Put structure on factor coefficients
Ad hoc example: $\beta'_{i,\tau} = a_i + b\tau$

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MODELING QUESTION: WHAT ARE THE CORRECT FACTORS?

- Country Risk:
 - probability of default
 - recovery rate of a "foreign government," not of a U.S. firm!
- U.S. Factors:
 - interest rate changes
 - yield spread - yield spread squared
- Domestic Factors:
 - exchange rate changes - stock returns

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Key Empirical Issues: Spreads and Yield Curves

Credit Spread Models: BHF (2006)

- $\Delta S = a + b\Delta Y + c\Delta(Y30-Y2) + d(\Delta Y)^2 + e\Delta I + f\Delta e + g1\Delta S_{(t-1)} + g2\Delta S_{(t-2)} + \dots + h1\varepsilon_{(t-1)} + h2\varepsilon_{(t-2)} + \dots$
- ΔY_t is the change in the risk free interest rate (identical in maturity to the riskless bond used to calculate the spread),
- $\Delta(Y30-Y2)_t$ is the change in the slope of the yield curve,
- $(\Delta Y)^2_t$ is the change in the squared spot rate (rates with the same maturity as the riskless bond),
- ΔI_t is the change in the logarithm of the stock market index, and
- Δe_t is the change in the spot exchange rate.
- The autoregressive terms ΔS_{t-n} , for $n = 1, 2, 3$ represent the lagged dependant variable, while the moving average terms ε_{t-n} , for $n = 1, 2, 3$ represent the lagged residual.

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Key Empirical Issues: Spreads and Yield Curves

Credit Spread Models: BHF (2006)

Table 6: Panel A: Regressions of changes in credit spreads of Asian in'l issues on U.S. Treasury (Benchmark) bonds

Pair	Mean Equation										Variance equation: GARCH(3,3) terms									
	a	bY	cY30-Y2	dY^2	eI	fE	gS1	gS2	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12
CHU08S2	-0.004	-0.234	0.107																	
CHU08S5	-0.005	-0.224	0.107																	
CHU08S8	-0.005	-0.224	0.107																	
CHU08S10	-0.005	-0.224	0.107																	
KOG08S5	-0.004	-0.234	0.107																	
KOG08S8	-0.004	-0.234	0.107																	
KOG08S10	-0.004	-0.234	0.107																	
PHU08S10	-0.005	-0.224	0.107																	
THU08S5	-0.005	-0.224	0.107																	

Notes: This table reports the regression coefficients from the specification of the regression model: $\Delta \text{CSP}_{t,i,\tau} = \lambda + \beta'_{i,\tau} F_t + \varepsilon_{t,i,\tau}$

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Table 6B - Information on the sovereign bonds of Asian issuers as at the 28th November 2002

Issuer	Code	Coupon	Issued	Maturity	Rating	Price	YTM	Modified Duration
CHINA, PEOPLE'S REPUBLIC OF	CHG08	7.3	12/9/1998	12/15/2008	BBB	118.41	3.928	5.017
CHINA, PEOPLE'S REPUBLIC OF	CHU06	7.75	7/1/1996	7/5/2006	BBB	115.52	3.327	3.266
CHINA, PEOPLE'S REPUBLIC OF	CHU04	6.5	2/2/1994	2/17/2004	BBB+	105.43	2.472	1.319
FEDERATION OF MALAYSIA	MYG09	8.75	5/27/1999	6/1/2009	BBB-	123	4.692	5.116
KOREA, REPUBLIC OF	KOG08	8.875	4/7/1998	4/15/2008	A-	124.14	3.978	4.385
PHILIPPINES, REPUBLIC OF	PHU24	9.5	10/14/1999	10/21/2024	BB+	108.8	8.602	9.286
PHILIPPINES, REPUBLIC OF	PHG19	9.875	1/6/1999	1/15/2019	BB+	99.25	9.965	7.834
PHILIPPINES, REPUBLIC OF	PHG08	8.875	4/2/1998	4/15/2008	BB+	105.3	7.681	4.197
THAILAND, KINGDOM OF	THU07	7.75	4/10/1997	4/15/2007	BBB-	115.46	3.994	3.772

Note: YTM is the ISMA yield to maturity of the bond. The designation "G" or "U" in the bond code refer to whether the bond was a global bond (G), or a Yankee bond (U)

Source: Reuters Fixed Income Database

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Sasin Selected Results fm BFH 2006 : asset and exchange rate factor

Interestingly, the asset factor was significant in 19 of the 36 cases but it was negative in 8 cases and positive in the remaining 11. A positive relationship suggests that a rise in the stock market results in an increase in the spread and may be due to rebalancing of bonds and stocks held by international portfolio managers.

The exception to this story appears to be the Philippines. In 8 out of the possible 12 regressions involving Philippines bonds, the stock index variable was negative and also economically significant at least at the 95% level.

The exchange rate variable was not significant with the exception of Philippines bonds where for 6 out of 12 possible regressions the value positive and of an economic variable consistent with the stock index variable. This suggest that a rise in the exchange rate (a depreciation of the peso) was also associated with an increase in the credit spread.

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Sasin Conclusions: Policy and Empirical Issues

- The main message is that development of foreign currency bonds is essential for development of domestic bond markets.
- It may be more desirable to develop domestic bond market and integrate with Int'l financial markets, not just regional, in globalized world.
- Recent impressive steps for infrastructure in trading [e.g. dealing, trading and settlement] are good.
- Politically gathering regional cooperation - Asean +3 bond fund is fine.
- Much has to be done on risk management area
 - Enhancing derivative markets
 - Enhancing risk mgt capability
- Develop Alternate investment vehicles for better, deeper and more diverse markets in asset-backed securities in German Pfandbrief market spirit.

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