Bachelor of Economics
THAMMASAT UNIVERSITY

FN 211 Financial Markets

Class 6: Bond Markets

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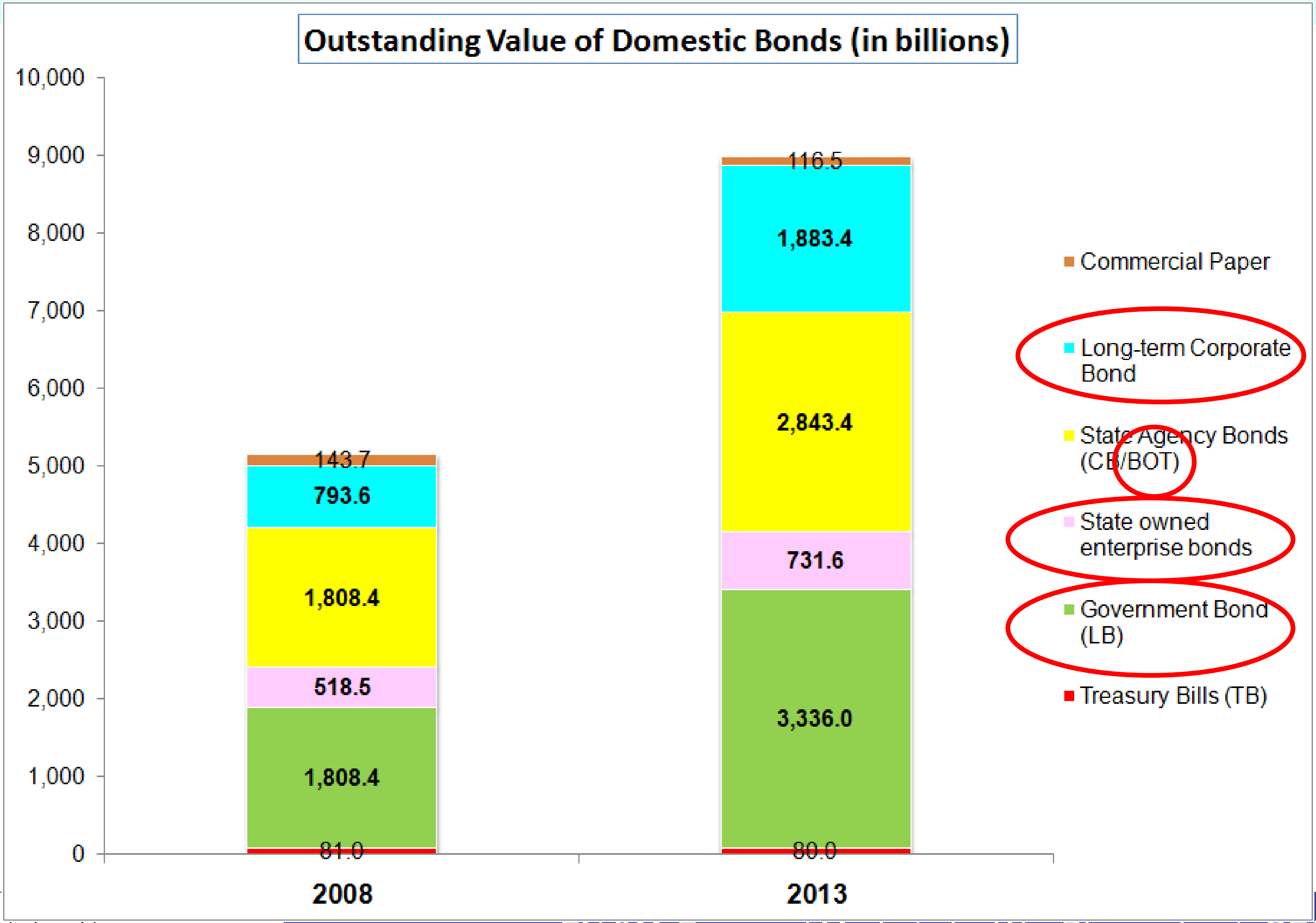
Overview of Thai Bond Markets



Today's Outline

The Thai Bond Market

- Characteristics and Participants
- Instruments
- The Auction Process of Government Bonds
- The Secondary Market
- Corporate Bonds

The Global Bond Market

- Overview
- Sovereign Bonds
- The US Bond Market

Bond Indexes

Characteristics of the Bond Markets

	Money Markets Instruments	Government Bonds	Corporate Bonds
Maturity	$\leq$ 1 year	> 1 year	
Denomination	Large	Large	Large, except for public offering
Default Risk	Very Low	Very Low	Low – High *(depend on rating)*
Interest Rate Risk *or* Price Risk	Low	Medium – High *(depend on duration)*	
Coupon	Zero coupon, usually sold at discount	Mostly Semi-annually	

Participants in the Bond Markets

Participant	Lender/ Borrower	Role
Ministry of Finance	Borrower	Issue Government Bonds (LB and SB) to borrow money
Bank of Thailand	Borrower	• Act as an agent of the MOF to distribute Government Bonds using e-auction • Issue Bank of Thailand Bonds (BOT) which are used primarily to conduct Monetary Policy.
Commercial Banks	Borrower	• Act as dealers in both the primary and secondary markets • Issue Corporate Bonds to borrow money

Participants in the Bond Markets

Participant	Lender/ Borrower	Role
Businesses	Borrower	• Issue Corporate Bonds to borrow money
Pension Funds/Insurance Companies	Lenders	• Invest in all types of bonds
Asset Management Companies	Lenders	• Invest in all types of bonds for their Mutual Funds
Individuals	Lenders	• Invest in Government and Corporate Bonds *indirectly* through Mutual Funds • Invest in Government Savings Bonds (SB) and some Corporate Bonds *directly.*

The Thai Bond Market: Instruments

1. **Government bonds** are medium to long-term debt instruments issued by the Ministry of Finance. They consist of three types;
   - Investment bonds (IB) have not been issued since 1991 and there are no issue remaining,
   - **Loan bonds (LB)** capture the majority of the market as they are issued for financing budget deficit.
   - **Saving bonds (SB)** are issued to provide households with alternative source of saving.
2. **State Agency Bonds** are bonds issued by
   - **Bank of Thailand.** These are called BOT bonds.
   - Financial Institution Development Fund (FIDF) (The last one was issued in 1998)

The Thai Bond Market: Instruments

Example of Government Bonds

- Code : LB233A
- Issuer : Ministry of Finance
- Initial Par : THB 1,000
- Issue Size : THB 50,000 million
- Issue Date : 28 December 2007
- Maturity Date : 13 March 2023
- Issue Term : 15 years (10y remaining)

Example of Bank of Thailand Bonds

- Code : BOT161A
- Issuer : Bank of Thailand
- Initial Par : THB 1,000
- Issue Size : THB 40,000 million
- Issue Date : 14 January 2013
- Maturity Date : 14 January 2016
- Issue Term : 3.0 Yrs.

The Thai Bond Market: Instruments

3. State Owned Enterprise (SOE) bonds are medium to long-term debt instruments issued by State Owned Enterprises.

- This can be categorized into 2 types; guaranteed and non-guaranteed by the Ministry of Finance (MoF) of which the guaranteed bonds account for 86% of total.
- However, there are restrictions on the government to provide debt guarantee for not exceeding 10 % of total budget expenditure.
- *Examples are EGAT, MEA, PEA, MWA, PWA, BMTA, ETA, SRT, GHB, BAAC, etc.*
- SOE bonds are normally issued and traded with **spread** over government bonds of the same maturity.

The Thai Bond Market: Instruments

Example of State Owned Enterprise Bonds

- Code : EXAT233A
- Issuer : Expressway Authority of Thailand
- Type: Guaranteed by the MOF
- Initial Par : THB 1,000
- Issue Size : THB 1,000 million
- Issue Date : 21 March 2013
- Maturity Date : 21 March 2023
- Issue Term : 10.0 years

Example of State Owned Enterprise Bonds

- Code : EGAT233A
- Issuer : Electricity Generating Authority of Thailand
- Type: Non-guaranteed
- Initial Par : THB 1,000
- Issue Size : THB 1,000 million
- Issue Date : 7 March 2013
- Maturity Date : 7 March 2023
- Issue Term : 10.0 Yrs.

The Thai Bond Market: Instruments

4. **Corporate Bonds** – issued by (normally large and well-known) private companies.

- *Examples are AIS, CPF, LH, PTT, SCC, etc.*
- Corporate bonds are normally issued and traded with **spread** over government bonds of the same maturity.
- Bonds with lower rating tend to have larger spread than bonds with higher rating.

Bond	*YTM*	*Spread over government bond (basis points)*
LB233A	3.63%	0
EXAT233A (G)	3.83%	20
EGAT233A (NG)	3.89%	26
BGH233A	4.63%	100

The Thai Bond Market: Instruments

โรงพยาบาลกรุงเทพ
BANGKOK HOSPITAL

Example of Corporate Bonds

- Code : BGH233A
- Issuer : Bangkok Dusit Medical Services
- Initial Par : THB 1,000
- Issue Size : THB 4,000 million
- Issue Date : 14 March 2013
- Maturity Date : 14 March 2023
- Issue Term : 10.0 years
- Coupon: Fixed at 4.63%
- Rating: A+
- Distribution: Private Placement

The Thai Bond Market: The Auction Process of Thai Government Bonds

- Government Bonds are issued through auction process, which is organized by the **Bank of Thailand** on a weekly basis.
- Just like T-Bill Auction, bidder who offers the lowest yield will have the first priority to be allocated the bonds and the rest of the bonds will be allocated consecutively to next bidders who offer a higher yield.
- Unlike corporate bonds in which one series of bonds is issued only once, one series of government bonds (i.e. LB17OA) is normally auctioned several times.

The Thai Bond Market:
The Auction Process of Thai Government Bonds

- **Single Price Auction** – all bidders pay the same price for the securities which is the lowest price of the competitive bids accepted. Used by the US Treasury since 1998.
- **Discriminating Price Auction** – different bidders paid different prices which are their bid prices. – Used by the Bank of Thailand.

- *Example: suppose a 10-year bond (**LB236A**) is to be auctioned today (6 Mar 2013) with the total amount of 14,000 million baht. You have submitted a bid for 100 million at 3.65% yield. Will you be allocated? At what yield?*

The Thai Bond Market:
The Auction Process of Thai Government Bonds

ThaiBMA Symbol	LB236A
Coupon Rate (%p.a.)	3.625
Payment Date	08 Mar 2013
Start Date of Interest Earning Period	16 Dec 2012
Maturity Date	16 Jun 2023
Issue Amount NCB+CB(Mil.Baht)	14,000
Accepted Amount NCB+CB(Mil.Baht)	14,000
Accepted Amount NCB(Mil.Baht)	-
Accepted Amount CB(Mil.Baht)	14,000
Accepted Lowest Yield(%)	3.642
Accepted Highest Yield (%)	3.657
Weighted Average Accepted Yield (%)	3.6512
Bid Coverage Ratio	1.92

The Thai Bond Market:
The Auction Process of Thai Government Bonds

- June 2002, the BOT launched **Non-competitive Bid (NCB)** available for small investors to submit bid at small amount (ranging from 4-40 million baht).
- **Competitive Bids** – bidders indicate both quantity and price. Bidder who offers the lowest yield (the highest price) will have the first priority to be allocated the bonds and the rest of the bonds will be allocated consecutively to next bidders who offer a higher yield.
- **Non-competitive Bids** – Noncompetitive bidders indicate quantity desired and agree to pay a weighted-average of the rate on winning competitive bids; get preferential allocation

Corporate Bonds: Introduction

- Are issued by (mostly) **investment-grade** corporations.
- They normally offer higher yield (return on government bonds + **spread**) to compensate for higher default or credit risk.
  - At the issuing date, coupon will be set equal to YTM of government bond with same maturity + spread.
  - Once the bonds are issued, they will be traded at yield equal to YTM of government bond with same maturity + spread.
- Since corporate bonds carry credit risk, credit ratings are required for all bond offerings.

Corporate Bonds: Introduction

- **Secured Bonds** – are bonds with collateral (such as a building or a factory) attached.
  - In the event that the firm fails to make payments as promised, the bondholders have the right to liquidate the assets in order to be paid.
  - Because these bonds have specific assets pledged as collateral, they are less risky and tend to have lower interest rate.
- **Unsecured Bonds** (also called Debentures) – are bonds backed only by the general creditworthiness of the issuer.
  - No specific collateral is pledged to repay the debt. In the event of default, the bondholders must go to court to seize assets.
  - Collateral that has been pledged to other debtors is not available to the holders of debentures.
  - **Subordinated debentures** are similar to debentures except that they have a lower priority claim. In the event of default, holders of these bonds are paid only after more senior bondholders are paid in full.

Corporate Bonds: Introduction

- Investors use various techniques to analyze information on companies and bond issues in order to estimate the ability of the issuer to live up to its future contractual obligations.
  - This activity is known as credit analysis.
- Individual investors and institutional bond investors rely primarily on nationally recognized rating companies that perform credit analysis and issue their conclusions in the form of ratings.
  - The three commercial rating companies are *Moody's Investors Service, Standard & Poor's Corporation, and Fitch Ratings*.

Corporate Bonds:
Credit Rating System

- In all rating systems the term high grade means low credit risk, or conversely, high probability of future payment.
  - Bond issues that are assigned a rating in the top four categories are referred to as investment-grade bonds.
  - Issues that carry a rating below the top four categories are referred to as noninvestment-grade bonds, or more popularly as high-yield bonds or junk bonds.
- Thus, the corporate bond market can be divided into two sectors: the investment-grade and noninvestment-grade markets.

Corporate Bonds:
Credit Rating System

S&P	Fitch	Moody's	Explanation
High Credit Quality – Investment Grade			
AAA	AAA	Aaa	Prime grade, highest safety
AA+ AA AA-	AA+ AA AA-	Aa1 Aa2 Aa3	High credit quality
A+ A A-	A+ A A-	A1 A2 A3	Upper-medium credit quality
BBB+ BBB BBB-	BBB+ BBB BBB-	Baa1 Baa2 Baa3	Lower-medium credit quality

Corporate Bonds:
Credit Rating System

S&P	Fitch	Moody's	Explanation
Lower Credit Quality – Speculative Grade			
BB+ BB BB-	BB+ BB BB-	Ba1 Ba2 Ba3	Speculative-low quality
B	B+ B B-	B1 B2 B3	Highly speculative
Extremely Low Credit Quality – Highly Speculative or in Default			
CCC+ CCC	CCC+ CCC	Caa	Very high risk, poor quality
CC	CC	Ca	May be in default soon
C	C	C	Very speculative
CI			For income bonds – interest not being paid
D	DDD DD D		Securities already in default

Corporate Bonds:
Historical Credit Default Statistics

ชื่อ	Thammasat - ThaiBMA - TRIS Transition Probability Matrix (As of 2013)
คำพรรณนา	The Matrix is engineered by Professor Anya Khanthavit of Thammasat University under the collaboration of Thammasat Business School, ThaiBMA and TRIS Rating.

อันดับ ณ ต้นปี	อันดับ ณ สิ้นปี							
	AAA	AA	A	BBB	BB	B	CCC/C	Def
AAA	90.22%	8.99%	0.56%	0.05%	0.08%	0.03%	0.05%	0.01%
AA	0.56%	89.94%	8.71%	0.59%	0.06%	0.08%	0.02%	0.02%
A	0.01%	3.07%	93.59%	2.99%	0.08%	0.03%	0.00%	0.24%
BBB	0.00%	0.10%	6.01%	88.55%	2.66%	0.63%	0.03%	2.01%
BB	0.02%	0.04%	0.22%	6.39%	83.29%	7.28%	0.73%	2.02%
B	0.00%	0.03%	0.13%	0.26%	6.13%	83.61%	4.98%	4.85%
CCC/C	0.00%	0.01%	0.19%	0.28%	0.85%	16.00%	51.29%	31.38%
Default	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%

The higher the rating, the lower the probability of default

Corporate Bonds:
Average Credit Spread

Averaged Spread

[Download] As of 13/03/2014 Go! (dd/mm/yyyy)

Corporate Bond Yield Curve (Based on TTM)

Grp.	Averaged Spread (bp)			Standard Deviation (bp)			Averaged Avg.Maturity		
	<= 3 Yrs.	3 - 5 Yrs.	> 5 Yrs.	<= 3 Yrs.	3 - 5 Yrs.	> 5 Yrs.	<= 3 Yrs.	3 - 5 Yrs.	> 5 Yrs.
AAA	62.325505	72.139563	70.309558	13.376525	9.673028	7.252234	1.496151	4.088699	7.475343
AA	67.879174	82.023533	93.681955	17.437955	9.192459	17.993973	1.447927	4.032420	8.512329
A	84.104239	102.884496	109.873503	21.530399	18.784944	19.096664	1.679243	4.036294	7.837102
BBB	188.242394	176.762558	174.998900	42.688000	35.086950	NaN	1.526672	3.831050	5.063014

Corporate Bond Yield Curve (Based on Duration)

Grp.	Averaged Spread (bp)			Standard Deviation (bp)			Averaged Avg.Maturity		
	<= 3 Yrs.	3 - 5 Yrs.	> 5 Yrs.	<= 3 Yrs.	3 - 5 Yrs.	> 5 Yrs.	<= 3 Yrs.	3 - 5 Yrs.	> 5 Yrs.
AAA	62.831733	71.584736	76.412238	13.256830	9.336009	13.869214	1.532590	4.581818	8.618836
AA	68.754083	88.283513	96.450817	18.935348	15.156627	17.191967	1.491877	4.441096	9.222983
A	84.595084	107.567170	114.076656	21.292183	18.663302	19.732762	1.755100	4.296228	8.168599
BBB	189.155746	176.955067		42.468776	34.096293		1.556955	3.994521	

Corporate Bonds: Historical Credit Spread

Key	Axis	Name	Last	Minimum		Maximum		Mean	SD	SD Change
	Left	U.S. Corporate Investment Grade	198.792	75.757	03/11/2005	617.958	12/03/2008	175.966	110.700	2.930

Corporate Bonds:
Issuer Rating vs. Issue Rating

	Company Rating (Issuer Rating)	Bond Rating (Issue Rating)
Bangkok Dusit Medical Services (BGH)	BGH => A+	BGH153A => A+ BGH166A => A+
True Corp	TRUE => BBB	TRUE174A => BBB- TRUE177A => BBB-
Sansiri	SIRI => BBB+	SIRI16OA => BBB SIRI188A => BBB
DAD SPV	DAD => No Rating	DAD20NA => AAA DAD25NA => AAA
Toyota Leasing (Thailand)	TLT => No Rating	TLT165A => AAA TLT168A => AAA

Corporate Bonds:
Examples of Credit Rating (as of Oct 2013)

Rating	Issuer/Issue
AAA	*Thai Government*, PTT Exploration and Production, Toyota Leasing (TLT), DAD SPV
AA+	Bangkok Metropolitan Administration
AA	I.C.C. International
AA-	Thai Union Frozen (TUF), Charoen Pokphand Food (CPF)
A+	Bangkok Dusit Medical (BGH), Thai Airways (THAI)
A	Land & House (LH), Central Plaza Hotel (CENTEL)
A-	Major Cineplex, Hemaraj Land (HEMRAJ)
BBB+	Ch. Karnchang (CK)
BBB	Double A (1991)
BBB-	Areeya Property, Italian-Thai Development
BB+	TSFC Securities

Corporate Bonds:
The Picnic Case

July 1, 2005 --The Securities and Exchange Commission (SEC) has laid criminal complaints of fraud and accounting misrepresentation against the brother and sister of Deputy Commerce Minister Suriya Larpwisuthisin for alleged fraud at Picnic Gas.

Mr Theeraratchanon and Ms Supaporn Lapvisutisinwere were accused of having signed gas cylinder rental contracts with 10 companies, later found to be related to Picnic executives. Picnic booked a gain of 178.4 million baht in 2004 operating performance from the contracts, which account for 24.26%of net profits.

The SEC also accused Mr Theeraratchanon of approving a loan of 85 million baht to two companies but the funds were in fact transferred to his personal account.

On June 24, Picnic defaulted on interest payments for 30 million baht in one-month bills held by five institutional investors.

Corporate Bonds: The TSFC Case

TSFC Securities formally <u>defaulted</u> on a bill-of-exchange payment on Dec 17, 2008, triggering a credit downgrade and raising further uncertainties about the company's viability as a going concern. Tris Rating yesterday announced that it had downgraded its rating for TSFC to D from C.

The TSFC's core businesses include offering margin loans to investors, securities repurchase agreements and portfolio investment in stocks, bonds and unit trusts. The company suffered portfolio losses with the sharp decline in the stock market in 2008.

As of November, the TSFC had 6.5 billion baht worth of bills of exchange outstanding in the market. On Nov 28, the SEC directed local asset managers to "set aside" holdings in TSFC bills of exchange to limit the potential losses for new fund investors.

Corporate Bonds:
The G STEEL Case

G Steel Public Company Limited ("G Steel") *was founded in the late of 1995 by Dr. Somsak Leeswadtrakul. The company is a producer and distributor of Hot Rolled Coil ("HRC") aiming at substituting imports and meeting domestic customers' demands. Its products serve as raw materials for such downstream industries as cold-rolled coils, galvanized steel, steel pipe, structural steel products for construction, automobile, as well as steel furniture industries.*

In 2009, G Steel defaulted on its US Dollar debt worth $170 million. S&P announced a downgrade from C to D.

GSteel

Corporate Bonds:
Structure of Toyota Leasing Bonds

TOYOTA

Toyota Motor Finance
(Netherlands)
rated **AA-** by S&P
(Company Rating)

↓ guarantee

Toyota Leasing
Thailand (TLT)
No rating

→ issue

TLT Bonds
*rated **AAA** by TRIS*
(Issue Rating)

Corporate Bonds:
Structure of Easy Buy Bonds

ACOM Co., Ltd.
BBB+ => **BB+** by S&P
(Company Rating)

guarantee

EASY BUY Public Company Limited
BBB+
(Company Rating)

issue

EASY BUY Bonds
AA => **BBB+** by TRIS
(Issue Rating)

Corporate Bonds:
Structure of DAD SPV Bonds

Ministry of Finance

↓ 100% Holding

Dhanarak Asset Development (DAD)

↓ 49% Holding

DAD SPV
No rating

→ issue →

DAD12NA, DAD15NA,…
rated **AAA** by TRIS
(Issue Rating)

Future revenue paid by the Treasury Department as the sole tenant

↓ secure ↓

DAD12NA, DAD15NA,…

The Secondary Market:

- Trading of bonds are mostly conducted through telephone or on an over- the-counter basis.
- All government debt securities and most corporate bonds are registered with the ThaiBMA. Dealers are required to report all bond transactions to ThaiBMA.
- ThaiBMA monitors, compiled and disseminates prices to the public at the end of day.
- Prices disseminated by ThaiBMA are used as market reference.
- Investors in bond market are mainly institutions including banks, mutual funds, provident funds, pension funds and insurance companies.

The Secondary Market:

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Thai Government Treasury Bonds

Deutsche Bank, Bangkok (Cont)

				YIELD		PRICE	
ISSUE	TENOR	COUPON	MATURITY	BID	ASK	BID	ASK
LB171A		5.500	18.01.17	3.27	3.17	115.32	116.07
LB175A		5.000	26.05.17	3.31	3.21	112.02	112.78
LB183A		3.875	07.03.18	3.53	3.43	102.65	103.42
LB183B		5.125	13.03.18	3.51	3.41	112.32	113.14
LB191A		5.625	12.01.19	3.64	3.54	116.30	117.20
LB198A		5.500	13.08.19	3.81	3.71	114.43	115.36

The Secondary Market:

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Thai Government Treasury Bonds
Standard Chartered Bank, Bangkok (Cont)

ISSUE	TTM	COUPON	MATURITY	BID	ASK
LB14DA	5.70	5.00	03-Dec-14	2.680	2.560
LB157A	6.30	7.20	07-Jul-15	2.870	2.720
LB167A	7.35	5.40	27-Jul-16	3.230	3.110
LB171A	7.83	5.50	18-Jan-17	3.330	3.210
LB183A	8.96	3.88	07-Mar-18	3.530	3.740
LB183B	8.98	5.125	13-Mar-18	3.530	3.480
LB191A	9.82	5.625	12-Jan-19	3.730	3.610
LB198A	10.40	5.50	13-Aug-19	3.880	3.760
LB19DA	10.71	5.38	03-Dec-19	3.980	3.860
LB213A	12.03	5.85	31-Mar-21	4.210	3.990
LB214A	12.06	6.40	09-Apr-21	4.210	4.090
LB22NA	13.64	5.13	08-Nov-22	4.610	4.490
LB233A	13.98	5.50	13-Mar-23	4.510	4.440
LB244A	15.06	4.50	09-Apr-24	4.610	4.440
LB267A	17.30	6.15	07-Jul-26	4.710	4.590
LB283A	18.99	5.67	13-Mar-28	4.760	4.640

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Bond Indexes

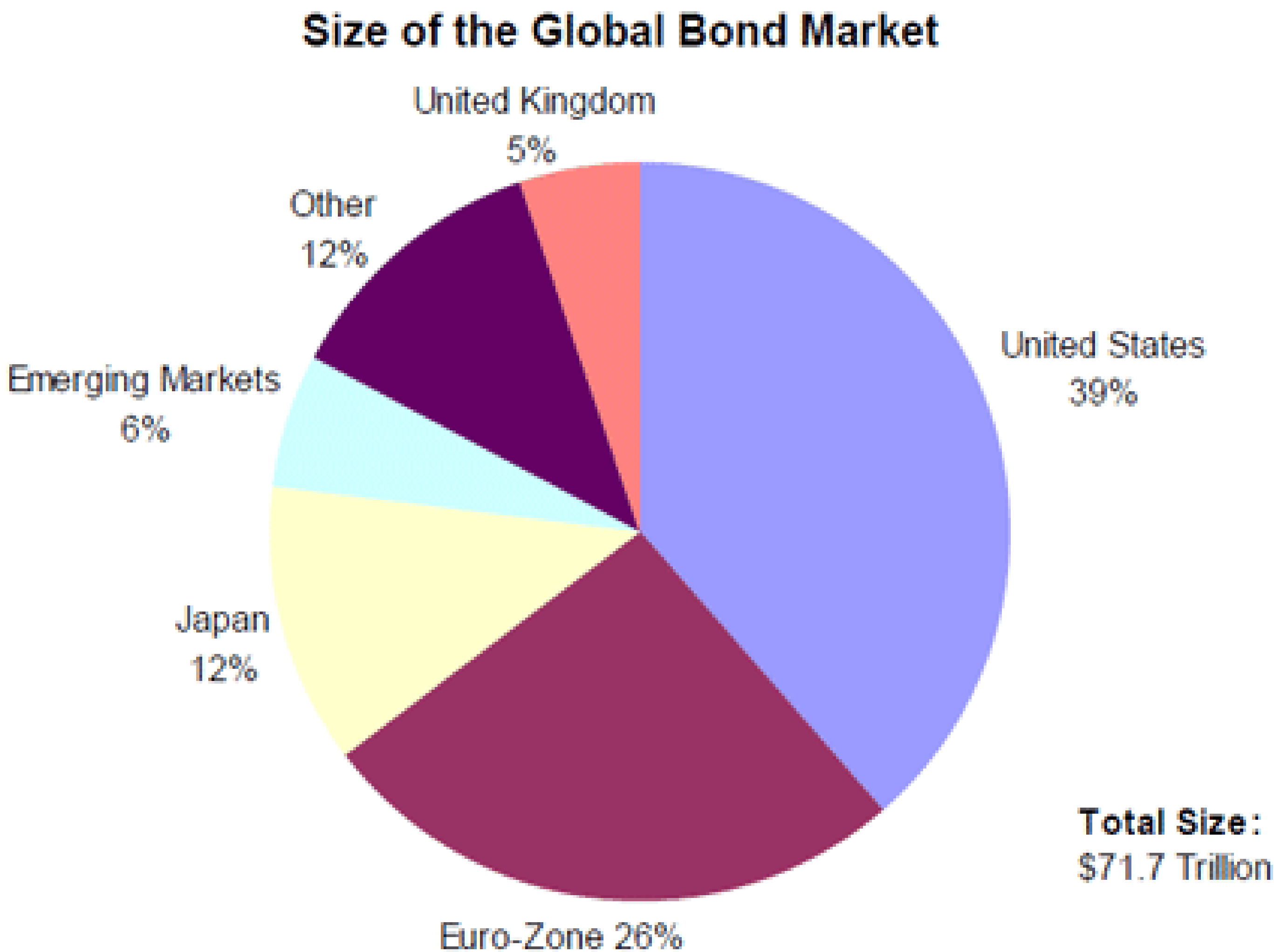
The Global Bond Market:
Foreign Bond Markets within Countries

- Dollar-denominated bonds issued by non-US entities but are traded in the US are nicknamed Yankee Bonds.
- In Japan, Yen-denominated bonds issued by non-Japanese entities are nicknamed Samurai Bonds.
- Can you guess the meanings of *Bulldog bonds, Rembrandt bonds and Matador bonds*?

The Global Bond Market:
Foreign Bond Markets within Countries

- For bonds issued outside the jurisdiction of any single country, they are parts of the Eurobond Market (*Euro = Global*) .
- The Eurobond market is divided into sectors depending on the currency in which the issue is denominated.
  - Eurobonds denominated in U.S. dollars are called Eurodollar bonds.
  - Eurobonds denominated in Japanese yen are called Euroyen bonds.
- The market can also be classified in terms of trading blocs.
  - Dollar bloc (US, Canada, Australia and New Zealand)
  - European bloc (EMU members and Non-EMU members such as UK, Norway, Denmark and Sweden)
  - Yen bloc
  - Emerging markets

The Global Bond Market:
Size of the Global Bond Market



Source: Bank for International Settlements

Sovereign Bonds: The Basics

- Are bonds issued by national governments, which can be in local or in foreign currency.

- The two largest non-U.S. government bond markets are those in Japan and Germany.
  - Japanese government securities are referred to as JGBs
  - The German government bonds are called Bunds.

- The creation of the European Monetary Union (EMU), combined with the decline in the U.S. Treasury issuance of securities, has resulted in the Euro government bond market becoming the largest government bond market in the world in terms of size and number of issues.

Sovereign Bonds:
The Basics

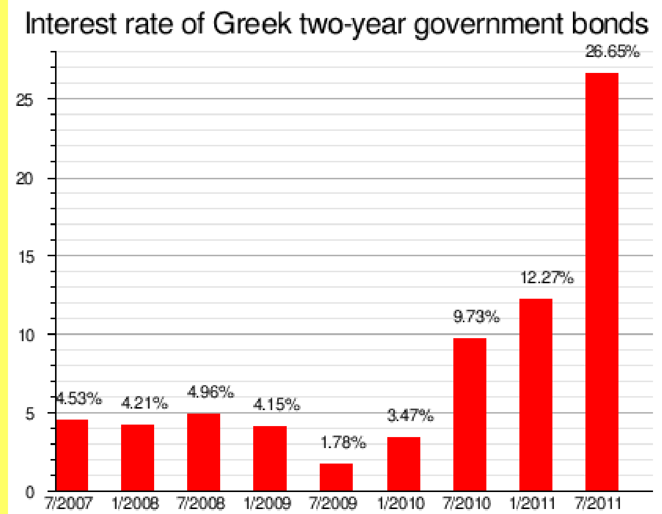
- These bonds are rated as well, by international rating agencies such as S&P or Moody's.
- The ratings are based on political risk, economic risk, monetary and fiscal policy, etc.
- Sovereign governments default more frequently on foreign currency debt than on local currency debt.
  - *In the past 25 years, sovereign foreign currency default rates have exceeded sovereign local currency default rates by at least 3 times.*
  - *This is why foreign currency ratings tend to be equal or lower than local currency ratings.*

Sovereign Bonds:
The Greek Debt Crisis

The Greek economy was one of the fastest growing in the Eurozone from 2000 to 2007. At the same time, successive Greek governments have customarily run <u>*large deficits*</u> *to finance public sector jobs, pensions, and other social benefits. Since 1993, the ratio of debt to GDP has remained above 100%. Initially currency devaluation helped finance the borrowing.*

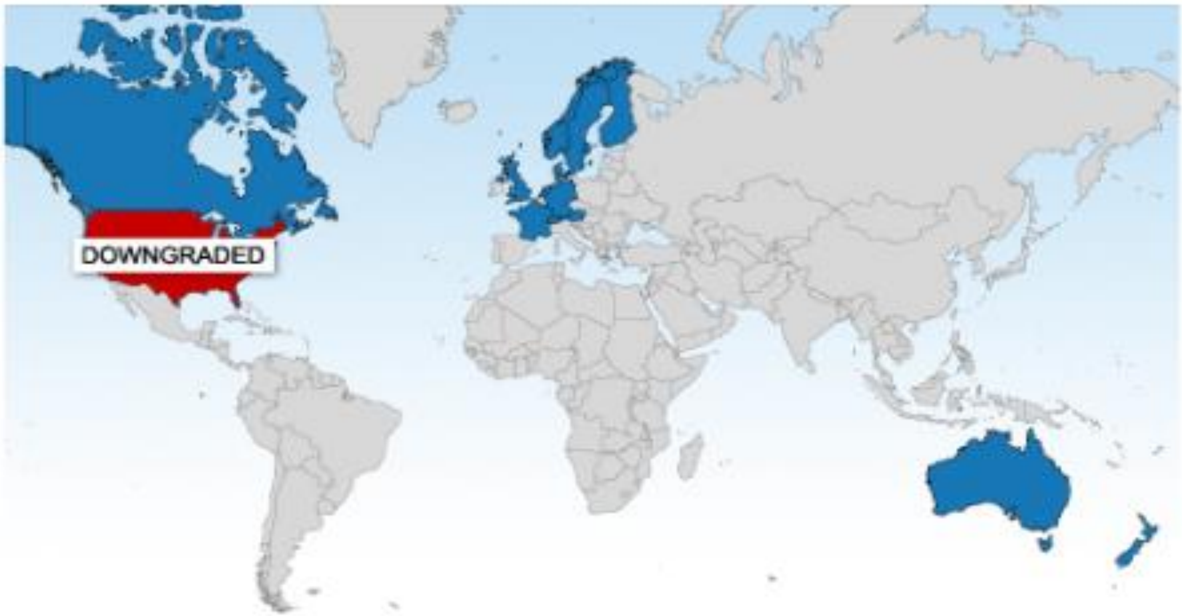
In 2010, the Greek government deficit was estimated to be 13.6% which is one of the highest in the world relative to GDP. Greek government debt was estimated to hit 120% of GDP in 2010.

On 27 April 2010, the Greek debt rating was decreased to the upper levels of 'junk' status by Standard & Poor's amidst hints of default by the Greek government. Yields on Greek government two-year bonds rose to 15.3% following the downgrading



Sovereign Bonds:
Sovereign Credit Ratings

TRIPLE-A CLUB



Australia	Germany	Singapore
Austria	Isle of Man	Sweden
Canada	Luxembourg	Switzerland
Denmark	Netherlands	United Kingdom
Finland	New Zealand	
France	Norway	

SOURCE: MOODY'S, STANDARD & POOR'S

These 15 countries (and the Isle of Man) have the world's highest credit rating, AAA from both Moody's and Standard & Poor's. The U.S. lost that high standing Friday, when S&P downgraded it to a AA+ rating.

Sovereign Bonds:
Sovereign Credit Ratings by S&P (as of Mar 2014)

Rating	Local Currency	Foreign Currency
AAA	Singapore, Hong Kong	Singapore, Hong Kong
AA+	USA	USA
AA		
AA-	Japan, Taiwan China, Korea	Japan, Taiwan China
A+		Korea
A	Malaysia	
A-	**Thailand**	Malaysia
BBB+		**Thailand**
BBB		
BBB-	India, Philippines	India, Philippines
BB+	Indonesia	Indonesia
BB-	Vietnam	Vietnam

Sovereign Bonds: Selected Past Defaults by S&P

Year	Foreign Currency Defaults	Local Currency Defaults
2010	Jamaica	Jamaica
2008	Ecuador, Seychelles	Ecuador
2006	Belize	
2005	Venezuela, Dominican Republic	Grenada
2004	Grenada	Cameroon
2003	Paraguay, Uruguay	
2002	Indonesia	
2001	Argentina	Argentina
2000	Indonesia	
1999	Russia, Pakistan	Dominican Republic

The US Bond Market:
Instruments

1. Treasury sector – securities issued by the U.S. government
   - Treasury Bills – matures in less than 1 year
   - Treasury Notes – maturity of 1 – 10 years
   - Treasury Bonds – maturity of 10 – 30 years
2. Agency bonds – securities issued by federally related institutions and government-sponsored enterprises
   - Agency bonds are normally issued and traded with spread over government bonds of the same maturity.
   - *Examples – Government National Mortgage Association (Ginnie Mae) issues bonds to raise funds that are used to finance home loans.*
3. Municipal bonds – securities issued by state and local governments.
   - The proceeds are used to finance public interest projects such as schools, utilities, and transportation systems.
   - Coupons of these bonds are exempt from federal tax, so municipalities can borrow at a lower cost because investors are satisfed with lower interest rates on tax-exempt bonds.

The US Bond Market: Instruments

4. Corporate bonds – securities issued in the U.S. by U.S. corporations and foreign corporations to raise money in order to expand their businesses.
5. Asset-Backed Securities – securities whose value and income payments are derived from and collateralized (or "backed") by a specified pool of underlying assets.
   - The pool of assets is typically a group of small and illiquid assets (such as *credit cards or auto loans*) that are unable to be sold individually.
6. Mortgage-Backed Securities – securities backed by cash flows from mortgage loans, most commonly on residential property.
   - Most MBSs are issued by government agencies which are Ginnie Mae, Fannie Mae and Freddie Mac.
   - Some private institutions, such as brokerage firms, and banks, also securitize mortgages, known as "private-label" mortgage securities.

Bond Indexes

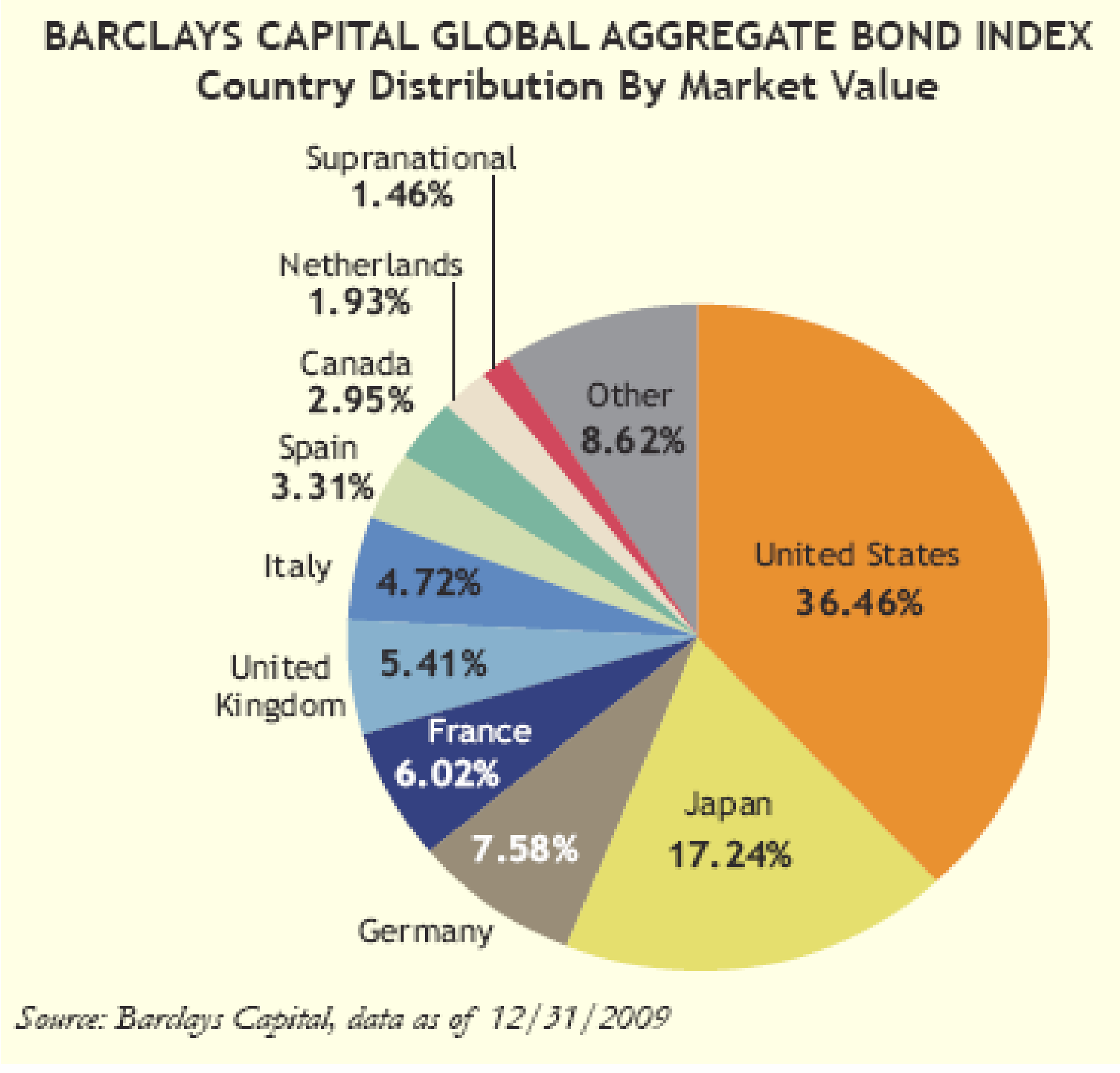
- Bond indexes are relatively new and not widely published.
- The creation of bond indexes is more difficult than stock indexes because:
  - The universe of bonds is much more diverse than that of stocks.
  - The universe of bonds is changing constantly due to new issues, bond maturities, calls and sinking fund bonds.
  - The price volatility of bonds changes constantly due to changes in maturity, coupon and market yield.
  - It’s difficult to price the individual bonds in an index due to the lack of current and continuous transaction prices.

Bond Indexes

Three major categories of bond indexes:

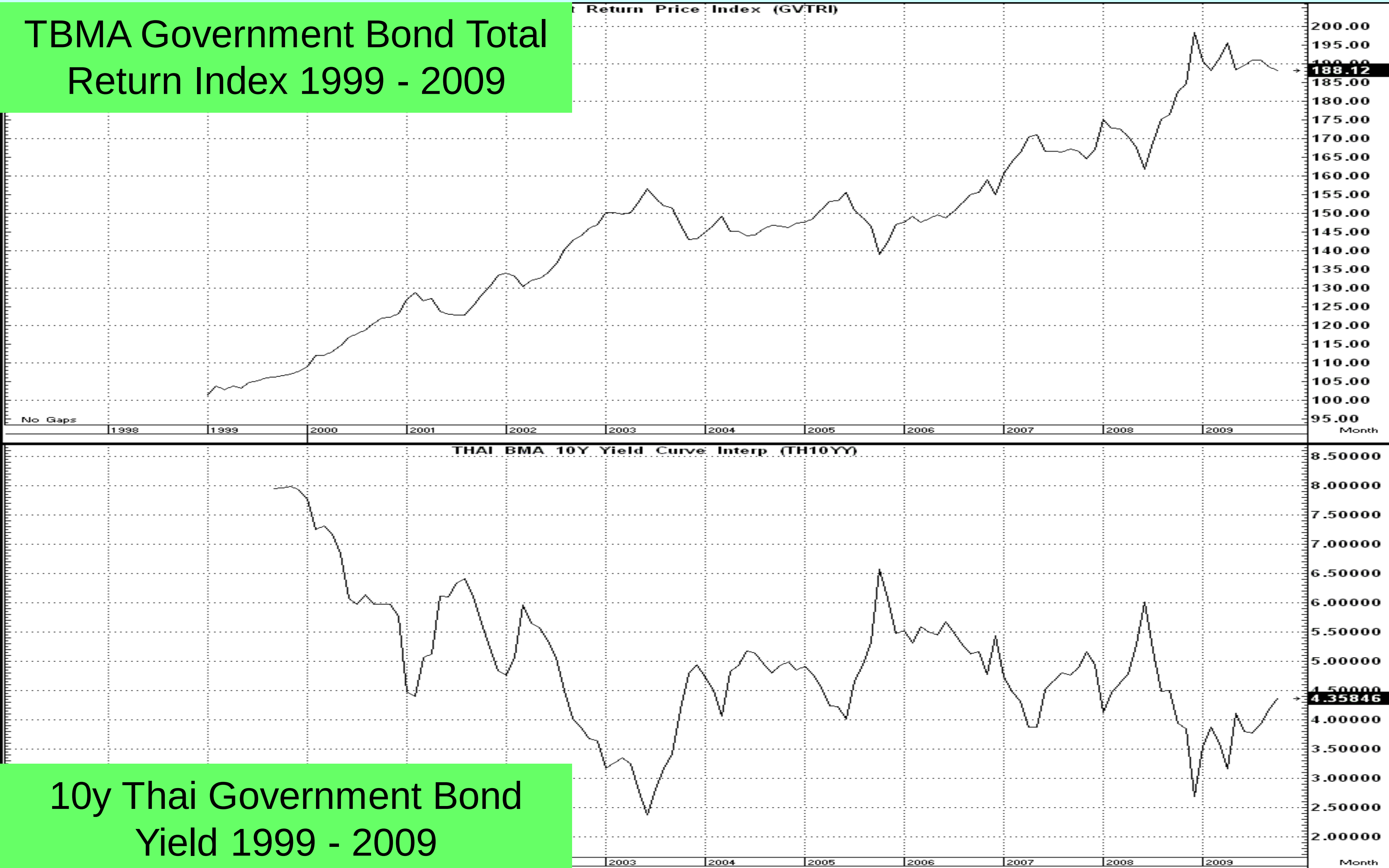
- Global bond indexes, such as:
  - JP Morgan Global Government Bond Index:
    - *Government Bonds only*
  - Barclays Global Aggregate Index (formerly Lehman)
    - *Government Bonds + Corporate Bonds*
- Thai bond indexes
  - TBMA Government Bond Total Return Index
  - TBMA Investment Grade Corporate Bond Index

Bond Indexes



Bond Indexes

TBMA Government Bond Total Return Index 1999 - 2009



10y Thai Government Bond Yield 1999 - 2009