เตรียมพร้อมเพื่อค้า TFEX Interest-Rate Futures และ TFEX Bond Futures ปีหน้า

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ภาควิชาการเงิน
และ ศูนย์ทดสอบทักษะด้านการจัดการแห่งมหาวิทยาลัยธรรมศาสตร์
คณะพาณิชยศาสตร์และการบัญชี มหาวิทยาลัยธรรมศาสตร์

A futures contract

- A futures contract is an agreement between two parties, a buyer and a seller, to purchase an underlying asset at a later date at a fixed price and that trades on a futures exchange and is subject to a daily settlement procedure to guarantee to each party that claims against the other party will be paid.
  - Underlying assets currently available in Thailand: A stock index (SET50), a single stock, gold, commodities (Thai Hom Mali 100% Grade B; White rice 100%; Ribbed smoked rubber sheet No.3; Tapioca chip)
  - Underlying assets available in the near future in Thailand: An interest rate, a government bond

Long and short

- Long: A position involving the purchase of a security or derivative. It also refers to the party holding the long position.
- Short: A position involving the sale of a security or derivative. It also refers to the party holding the short position.

A futures contract versus a forward contract

Forward	*Futures*
Private contract between two parties	Traded on an exchange
Not standardized	Standardized
Usually one specified delivery date	Range of delivery dates
Settled at end of contract	Settled daily
Delivery or final settlement usual	Usually closed out prior to maturity
Some credit risk	Virtually no credit risk

An option contract

- An option is a contract granting the right to buy or sell an underlying asset at a fixed price for a specific time period.
  - A stock index option currently available on TFEX
    - An underlying asset: the SET50 index
  - A warrant and a derivative warrant
    - An underlying asset: a single stock

Short-term Interest Rate (STIR) Futures

- A short-term interest rate futures contract is an agreement on a short-term fixed income security agreed upon today for future delivery.
  - An underlying rate: A short-term interest rate
  - Example: A three-month Eurodollar futures contract is a futures contract on the three-month (90-day) Eurodollar interest rate.
- Positions
  - Long position → Obligation: Deposit or invest in the future
  - Short position → Obligation: Borrow or issue a debt instrument in the future

Exchange-traded versus OTC contracts on interest rates

- Exchange-traded contracts on interest rates
  - Interest rate futures
- OTC contracts on interest rates
  - Forward rate agreements (FRAs)
  - Interest rate swaps

STIR Futures: Examples

BURSA MALAYSIA

3 Month Kuala Lumpur Interbank Offered Rate Futures (FKB3)

Contract Code	FKB3
Underlying Instrument	Ringgit Interbank time deposit in the Kuala Lumpur Wholesale Money Market with a three month maturity on a 360-day year.
Contract Size	RM1,000,000 Quoted in index terms (100.00 minus yield).
Minimum Price Fluctuation	0.01% or 1 tick.
Contract Months	Quarterly cycle months of March, June, September and December up to 5 years ahead and 2 serial months.
Trading Hours	First trading session: Malaysian 9:00 a.m. to 12:30 p.m. Second trading session: Malaysian 2:30 p.m. to 5:00 p.m.
Final Trading Day and Maturity Date	Trading ceases at 11:00 a.m. (Malaysian time) on the 3rd Wednesday of the delivery month or the 1 st Business Day immediately following the 3rd Wednesday of the delivery month if the 3rd Wednesday of the delivery month is not a Business Day.
Final Settlement	Cash Settlement based on the Cash Settlement Value.
Final Settlement Value	i. Calculated as 100.00 minus the Three Month KLIBOR as published by Reuters Ltd. On reference page "KLIBOR" at 11:00 hours (Malaysian time) on the Final Trading Day. ii. In the event that the above calculation (i) cannot be made, the final settlement value shall be calculated as 100.00 minus the Three Month KLIBOR as published by Dow Jones Telerate Ltd on page number 46387 at 11:00 hours (Malaysian time) on the Final Trading Day. iii. In the event that the above calculation (i) and (ii) cannot be made, the final settlement value shall be calculated as 100.00 minus the Three Month KLIBOR as obtained from Bank Negara Malaysia at 11.00 hours (Malaysian time) on the Final Trading Day. In the event that none of the above 3 calculations can be made, the final settlement value shall be determined by the Exchange.
Speculative Position Limits	5,000 contracts, net gross Open Position for all delivery months.

CME Group

A CME/Chicago Board of Trade/NYMEX Company

Eurodollar Futures

Underlying Instrument	Eurodollar Time Deposit having a principal value of USD $1,000,000 with a three-month maturity.	
Price Quote	Quoted in IMM Three-Month LIBOR index points or 100 minus the rate on an annual basis over a 360 day year (e.g., a rate of 2.5% shall be quoted as 97.50). 1 basis point = .01 = $25.	
Tick Size (minimum fluctuation)	One-quarter of one basis point (0.0025 = $6.25 per contract) in the nearest expiring contract month; One-half of one basis point (0.005 = $12.50 per contract) in all other contract months. The "new" front-month contract begins trading in 0.0025 increments at 7:20 a.m, Central Time (CT), after the "old" expiring front-month contract ceases trading at 11:00 a.m. London time on the expiring contract month's last trading day.	
Contract Months	Mar, Jun, Sep, Dec, extending out 10 years (total of 40 contracts) plus the four nearest serial expirations (months that are not in the March quarterly cycle). The new contract month terminating 10 years in the future is listed on the Tuesday following expiration of the front quarterly contract month.	
Last Trading Day	The second London bank business day prior to the third Wednesday of the contract expiry month. Trading in the expiring contract closes at 11:00 a.m. London Time on the last trading day.	
Final Settlement	Expiring contracts are cash settled to 100 minus the British Bankers' Association survey of 3-month U.S. Dollar LIBOR on the last trading day. Final settlement price will be rounded to four decimal places, equal to 1/10,000 of a percent, or $0.25 per contract.	
Position Limits	None	
Block Minimum	Block Trading Minimums	
All or None Minimum	All or None Minimums	
Rulebook Chapter	CME Chapter 452	
Trading Hours (All times listed are Central Time)	OPEN OUTCRY	MON-FRI: 7:20 a.m. - 2:00 p.m.
	CME GLOBEX	SUN - FRI: 5:00 p.m. - 4:00 p.m. CT
Ticker Symbol	OPEN OUTCRY	ED
	GE	CME GLOBEX
Exchange Rule	These contracts are listed with, and subject to, the rules and regulations of CME.	

STIR Futures: An example

- Underlying rate and maturity of an underlying instrument

Underlying Instrument	Eurodollar Time Deposit having a principal value of USD $1,000,000 with a three-month maturity.

- Futures price = 100 – R

STIR

Name	Venue	Month	Prices	Change
Eurodollar	Globex	Dec 09	99.630	-0.005
Eurodollar	Floor	Dec 09	99.6300	-0.0050

- Contract size

Underlying Instrument	Eurodollar Time Deposit having a principal value of USD $1,000,000 with a three-month maturity.

STIR Futures: Examples

STIR

Name	Venue	Month	Prices	Change
Eurodollar	Globex	Dec 09	99.630	-0.005
Eurodollar	Floor	Dec 09	99.6300	-0.0050

- Marking to market

  = (Futures price change / number of intervals in a year)*Contract size

  = (0.005%/4) x USD 1,000,000 = 12.50/contract

  - Note: A decrease in a futures price = an increase in an interest rate (0.5 BPs)
    - Long position → Pay USD 12.50/contract
    - Short position → Receive USD 12.50/contract

- Final settlement
  - Cash settlement

STIR Futures: An application

STIR

Name	Venue	Month	Prices	Change
Eurodollar	Globex	Dec 09	99.630	-0.005
Eurodollar	Floor	Dec 09	99.6300	-0.0050

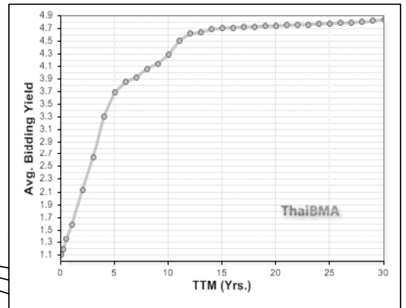
- A company wants to lock in the interest rate that will be paid on a three-month Eurodollar 1 million loan borrowed one month from today.
  - A three-month Eurodollar interest rate in one month = 100 – 99.63 = 0.37%.
- The company is short one December 09 Eurodollar interest rate futures contract.
- One month later:
  - An interest rate = 0.50%: The company receives USD 325.
    - Net payment = 1250 – 325 = USD 925 → 0.37% per annum
  - An interest rate = 0.25%: The company pays USD 3.00.
    - Net payment = 625 + 300 = USD 925 → 0.37% per annum

Spot interest rates, bond yields, and bond prices

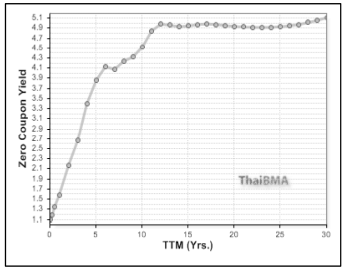
$$P_0 = \frac{C_1}{(1+s_1)} + \frac{C_2}{(1+s_2)^2} + ... + \frac{C_T + Par}{(1+s_T)^T}$$

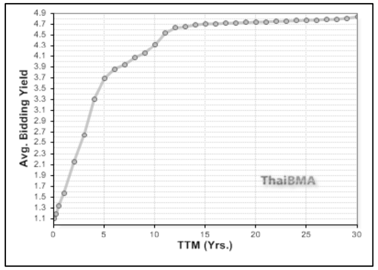
$$P_0 = \frac{C_1}{(1+y)} + \frac{C_2}{(1+y)^2} + ... + \frac{C_T + Par}{(1+y)^T}$$

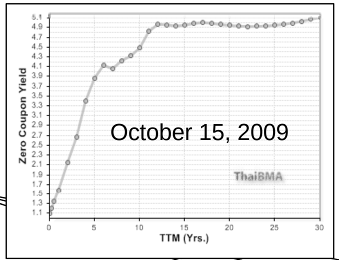
Assumption: Coupons paid annually

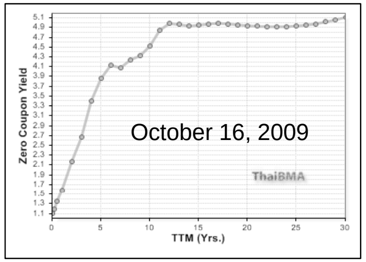


Spot interest rates, bond yields, and bond prices









- Daily percentage changes of spot interest rates

ระยะ	1 เดือน	3 เดือน	6 เดือน	1 ปี	2 ปี	3 ปี	4 ปี	5 ปี	6 ปี	7 ปี	8 ปี	9 ปี	10 ปี	11 ปี	12 ปี	13 ปี	14 ปี	15 ปี	16 ปี
STD	0.0145	0.0123	0.0118	0.0125	0.0156	0.0166	0.0169	0.0171	0.0160	0.0159	0.0152	0.0152	0.0144	0.0123	0.0111	0.0106	0.0106	0.0106	0.0102
สูงสุด	0.1652	0.1335	0.1247	0.1302	0.2038	0.2393	0.1390	0.1332	0.1278	0.1175	0.1026	0.1041	0.1280	0.1010	0.0841	0.0819	0.0900	0.0959	0.0961
ต่ำสุด	-0.1282	-0.1012	-0.1027	-0.1156	-0.1259	-0.1327	-0.1338	-0.1319	-0.1394	-0.1330	-0.1513	-0.1314	-0.1116	-0.1083	-0.1065	-0.1172	-0.1305	-0.1399	-0.1419
P 1.00	-0.0473	-0.0363	-0.0353	-0.0337	-0.0453	-0.0443	-0.0450	-0.0498	-0.0399	-0.0380	-0.0402	-0.0386	-0.0391	-0.0350	-0.0291	-0.0305	-0.0280	-0.0272	-0.0277
P 2.50	-0.0280	-0.0220	-0.0211	-0.0206	-0.0274	-0.0309	-0.0321	-0.0314	-0.0301	-0.0298	-0.0299	-0.0299	-0.0279	-0.0233	-0.0216	-0.0203	-0.0192	-0.0187	-0.0178
P 5.00	-0.0173	-0.0156	-0.0135	-0.0133	-0.0198	-0.0215	-0.0237	-0.0227	-0.0225	-0.0216	-0.0217	-0.0214	-0.0195	-0.0172	-0.0152	-0.0148	-0.0142	-0.0139	-0.0133
P 95.00	0.0148	0.0153	0.0141	0.0174	0.0205	0.0221	0.0241	0.0256	0.0223	0.0232	0.0222	0.0224	0.0204	0.0181	0.0150	0.0145	0.0146	0.0149	0.0138
P 97.50	0.0274	0.0238	0.0227	0.0275	0.0323	0.0346	0.0358	0.0367	0.0341	0.0323	0.0328	0.0331	0.0320	0.0271	0.0238	0.0223	0.0220	0.0205	0.0191
P 99.00	0.0458	0.0382	0.0390	0.0421	0.0494	0.0523	0.0591	0.0584	0.0562	0.0480	0.0486	0.0470	0.0467	0.0384	0.0375	0.0325	0.0355	0.0335	0.0329

- Outstanding debt value (THB '000 million)

Year	Government bonds	Treasury bills	SOE bonds	Corporate debentures	Total
2005	1,360.49	209.00	489.09	659.93	2,718.51
2006	1,509.07	228.00	492.89	942.51	3,172.47
2007	1,757.55	114.00	521.84	1,069.27	3,462.66
2008	1,850.56	81.00	518.48	1,120.08	3,570.12
Aug 2009	2,101.29	286.46	539.55	1,341.64	4,268.94

- Interest rate derivatives (THB million)

Quarter	Interest rate derivatives	Interest rate swap	
		Cumulative	Quarter
1/2009	7,875,419	1,971,366	401,838
2/2009	8,744,254	2,197,244	320,670
3/2009	9,233,868	2,202,516	276,734
4/2009	9,072,389	2,205,249	197,220
1/2009	9,074,962	2,299,107	244,239
2/2009	9,328,055	2,156,103	234,618

Bond futures contracts (KRX) (1)

Specification of 5-year KTB Futures

Underlying Asset	5-year Korea Treasury Bond with 8% coupon rate and semiannual coupon payment
Contract Size	KRW 100 million
Contract Months	The first two consecutive months in the quarterly cycle(March, June, September and December)
Trading Hours	09:00 ~ 15:15(09:00 ~ 11:30 on the last trading day)
Tick Size & Value	0.01 point, representing a value of KRW 10,000
Last Trading Day	Third Tuesday of the contract month
Final Settlement Day	The following day of the last trading day
Final Settlement	Cash
Position Limit	It can be adopted when the KRX deems necessary
Listing date	August 22, 2003

Bond futures contracts (KRX) (2)

Specification of 10-Year KTB Futures

Underlying Asset	10-Year Korea Treasury Bond with 5% coupon rate and semiannual coupon payment
Contract Size	KRW 50 million
Contract Months	The first three consecutive months in the quarterly cycle(March, June, September and December)
Trading Hours	09:00 ~ 15:15 (09:00 ~ 11:30 on the last trading day)
Tick Size & Value	0.02 point, representing a value of KRW 10,000
Last Trading Day	Third Tuesday of the contract month
Final Settlement Day	The second business day after the last trading day
Final Settlement	Physical delivery
Position Limit	5,000 contracts (contract month in which the last trading day belongs)
Listing date	February 25, 2008

Hedging

- Direct hedge
- Cross hedge

Related Issues

- Bond futures: Underlying assets = Thai government LB with a fixed coupon rate of 8% and 5 years to maturity
- Availability of LBs on October 16, 2009

Tranche	Coupon rate (% p.a.)	Maturity (years)	Face value (THB million)
LB13OA	4.000	4.01	25,000.00
LB143A	8.250	4.39	40,000.00
LB145A	4.875	4.58	10,000.00
LB145B	5.250	4.58	121,035.00
LB14DA	5.000	5.14	44,000.00
LB157A	7.200	5.73	35,950.00

- Delivery and settlements?

Delivery and settlements

Specification of 10-Year KTB Futures

Underlying Asset	10-Year Korea Treasury Bond with 5% coupon rate and semiannual coupon payment
Contract Size	KRW 50 million
Contract Months	The first three consecutive months in the quarterly cycle(March, June, September and December)
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Specification of 5-year KTB F

Underlying Asset	
Contract Size	
Contract Months	
Trading Hours	
Tick Size & Value	
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Related issues

- Deliverable bonds and conversion factors

Deliverable KTBs and Conversion Factor

Deliverable KTBs	KR Code	CF (LKTB0909)	CF (LKTB0912)	CF (LKTB1003)
Treasury 0525-1509	KR1035027R95	1,012775	1,012241	-
Treasury 0500-1609	KR1035027S94	0,999989	0,999923	0,999987
Treasury 0550-1709	KR1035027T93	1,032561	1,031647	1,030865
Treasury 0575-1809	KR1035027V99	1,053720	1,052443	1,051300

- Cheapest-to-deliver bonds
- The wild card play