

Using SET 50 Index Futures and ETFs

FN 451



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Outline of talk

- A primer on S50 Futures
- Hedging with S50 futures contracts
- ETF Introduction
- Structure and benefits
- Investing in ETFs



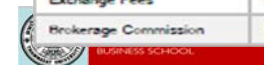
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A primer on S50 futures

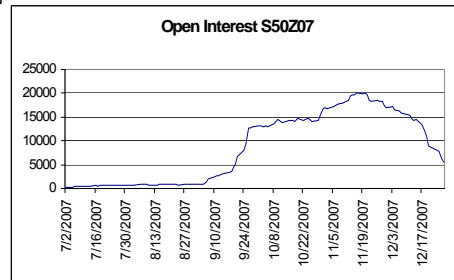
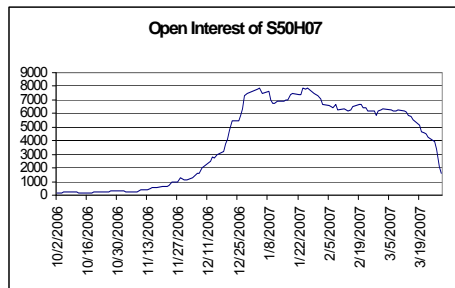
- Contract features
- Marking to market concept
- Determinants of S50 futures price



Heading	Contract Specification	
Underlying Asset	SET50 Index which is compiled, computed and disseminated by the Stock Exchange of Thailand	
Ticker Symbol	S50	
Contract Multiplier	THB 1,000 per index point	
Contract Months	3 nearest consecutive months plus the next 3 quarterly months	
Price Quotation	SET50 Index price	
Minimum Price Fluctuations	0.10 index point (or THB 100 per contract)	
Price Limit	±30% of the latest settlement price	
Trading Hours	Pre - open:	09:15 - 09:45 hrs.
	Morning session:	09:45 - 12:30 hrs.
	Pre - open:	14:00 - 14:30 hrs.
	Afternoon session:	14:30 - 16:55 hrs.
Position Limit	Net 20,000 delta equivalent SET50 Index Futures contracts on one side of the market in any contract months of SET50 Index Futures and SET50 Index Options combined.	
Last Trading Day	The business day immediately preceding the last business day of the contract month. Time at which trading ceases on Last Trading Day is 16:30 hrs.	
Final Settlement Price	The final settlement price shall be the numerical value of the SET50 Index, rounded to the nearest two decimal points as determined by the exchange, and shall be the average value of the SET50 Index taken during last 15 minutes and the closing index value, after deleting the three highest and three lowest values.	
Settlement Method	Cash Settlement	
Exchange Fees	Maximum of THB 50 per contract per side	
Brokerage Commission	Freely negotiable	



Open interests



Marking to market: Long position

Date	S50 Index	S50 Futures	Daily Profit/Loss	Cum Profit/Loss	Margin Acc	Margin Call
1-Mar-13	1,452	1,450			47,500	
1-Mar-13	1,458	1,455	5,000	5,000	52,500	
2-Mar-13	1,448	1,444	(11,000)	(6,000)	41,500	
3-Mar-13	1,431	1,426	(18,000)	(24,000)	23,500	24,000
4-Mar-13	1,425	1,422	(4,000)	(28,000)	43,500	
5-Mar-13	1,434	1,430	8,000	(20,000)	51,500	
6-Mar-13	1,430	1,425	(5,000)	(25,000)	46,500	
7-Mar-13	1,445	1,441	16,000	(9,000)	62,500	
8-Mar-13	1,467	1,465	24,000	15,000	86,500	
9-Mar-13	1,478	1,477	12,000	27,000	98,500	
10-Mar-13	1,463	1,460	(17,000)	10,000	81,500	

Marking to market: Short position

Date	S50 Index	S50 Futures	Daily Profit/Loss	Cum Profit/Loss	Margin Acc	Margin Call
1-Mar-13	1,452	1,450			47,500	
1-Mar-13	1,458	1,455	(5,000)	(5,000)	42,500	
2-Mar-13	1,448	1,444	11,000	6,000	53,500	
3-Mar-13	1,431	1,426	18,000	24,000	71,500	
4-Mar-13	1,425	1,422	4,000	28,000	75,500	
5-Mar-13	1,434	1,430	(8,000)	20,000	67,500	
6-Mar-13	1,430	1,425	5,000	25,000	72,500	
7-Mar-13	1,445	1,441	(16,000)	9,000	56,500	
8-Mar-13	1,467	1,464	(23,000)	(14,000)	33,500	
9-Mar-13	1,478	1,477	(13,000)	(27,000)	20,500	27,000
10-Mar-13					47,500	
10-Mar-13	1,463	1,460	17,000	(10,000)	64,500	

Unit : Baht / Contract

Contract	Clearing House Margin		Individual Investor Margin				Institutional Investor Margin			
	Outright	Spread	Outright		Spread		Outright		Spread	
			Initial Margin	Maintenance	Initial Margin	Maintenance	Initial Margin	Maintenance	Initial Margin	Maintenance
Index Market										
SET50 Index Futures	25,000	6,250	47,500.00	33,250.00	11,875.00	8,312.50	33,750.00	25,000.00	8,437.50	6,250.00
BANK	16,000	4,000	30,400.00	21,280.00	7,600.00	5,320.00	21,600.00	16,000.00	5,400.00	4,000.00
ENERG	6,500	1,625	12,350.00	8,645.00	3,087.50	2,161.25	8,775.00	6,500.00	2,193.75	1,625.00
FOOD	3,700	925	7,030.00	4,921.00	1,757.50	1,230.25	4,995.00	3,700.00	1,248.75	925.00
ICT	7,000	1,750	13,300.00	9,310.00	3,325.00	2,327.50	9,450.00	7,000.00	2,362.50	1,750.00
COMM	8,000	2,000	15,200.00	10,640.00	3,800.00	2,660.00	10,800.00	8,000.00	2,700.00	2,000.00

The “leverage” effect

- Futures trader uses little money for big exposure.
- Example: An investor purchases S50 futures at 600 points.
- Initial margin + Commissions + VAT = 49,500 + 450 + 31.50 = 49,981.50
- This is worth only 8.3% (49,981.50/600,000) of total investment value.



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Determinants of pricing: Cost of carry model

$$F_{t,T} = S_t e^{(r-d)(T-t)}$$

- S_t Spot price
- $F_{t,T}$ Futures price
- $T-t$ Time to maturity
- r risk free rate
- e approx. 2.718



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Hedging with S50 futures contracts

- Beta hedge
- Evaluating hedging effectiveness



Hedging Using Index Futures

- To hedge the risk in a (long) portfolio the number of contracts that should be shorted is

$$N^* = \beta \frac{P}{A}$$

where P is the value of the portfolio,

β is its beta (in these example assumes perfect correlation between index futures and underlying index)

A is the value of the assets underlying one futures contract



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Example

Value of S&P 500 is 1,000

Value of Portfolio is \$5 million

Beta of portfolio is 1.5

$$N^* = \beta \frac{P}{A}$$

What position in futures contracts on the S&P 500 is necessary to hedge the portfolio?

$$N^* = 1.5 \times \frac{\$5,000,000}{\$1,000 \times 250} = 30$$

Go *short* 30 contracts

(each futures contract is on \$250 times the index)



Beta hedge

- A fund manager wishes to hedge a portfolio worth 200 mn with beta of 1.25. The current level of S50 Index = 500 and S50 Index in 3 months = 500
- The optimum hedge ratio = $-\beta \times \text{value of portfolio} / \text{value of assets underlying one futures contract}$
- $N^* = -1.25 * (200 \text{ mn}) / (500 * 1000) = - 500$ contracts (sell futures contracts)



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Beta hedge

- 3 months later
- S50 index falls to 450 (10%) portfolio loses value (10%*1.25 = 12.5%)
- Loss on portfolio = 12.5% * 200 m = 25 mn
- Gain on futures = (500-450)*500*1000 = 25 mn
- What is the beta of this hedged portfolio cash flows?



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Reducing port. volatility

- S50 Futures can be used to reduce port. volatility
 - Begin with computing optimal no. of contracts.
= - Beta * Mkt Value of portfolio / Contract value
- Example
 - Current mkt value of port is THB 100 mn Portfolio Beta = 1.1, SET50 Index = 500 points, Futures SET50 in 3 months selling at 500 points
 - No. of contracts short
= - 1.1 * 100,000,000 / (500 * 1,000)
= - 220 contracts (short)



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Reducing portfolio volatility

- 3 months later
 - SET50 Index falls to 450 points
 - Index falls 10% Port loss 11% = 11 mn baht
 - Futures profit $=(500-450)*220$ = 11 mn baht
 - SET50 Index increases to 550 points
 - Index up 10% Port profit 11% = 11 mn baht
 - Futures loss $=(500-550)*220$ = 11 mn baht
- Return now becomes 0 or Beta of Port reduces to 0
- Note: We are ignoring potential margin calls here.



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Beta strategy: Reducing or increase exposure

- If only Futures 110 contracts shorted
 - SET50 Index falls to 450 points
 - Port loss 11 mn baht Futures gain 5.5 mn baht
 - Net loss 5.5 mn baht
 - SET50 Index goes up to 550 points
 - Port gains 11 mn baht Futures loss 5.5 mn baht
 - Net profit 5.5 mn baht
 - Use of Portfolio Beta shifting strategy
 - Increase or reduce exposure
 - Yield enhancement or risk reduction



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Some practical problems

- Pick contract closest to maturity to your hedging exposure needs. If no exact match, find longer period contracts.



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Final remarks

- Hedging is an important aspect of investment strategy given risk/loss aversion.
- Hedging effectiveness improves when investor has a diversified portfolio.
- Hedge to be out of the market for a short period of time. (Hedging may be cheaper than selling the portfolio and buying it back.)
- Hedge systematic risk (Appropriate when you feel that you have picked stocks that will outperform the market.)



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Introduction to ETFs



What are ETF's?: The Basics

- Exchange Traded Funds (ETFs) are open ended mutual funds.*
- ETFs represent a fractional ownership in the underlying securities in a particular index.
- ETFs can be traded like stock on the major stock exchanges.
- Unlike closed-end funds, the number of ETF shares can change daily.
- Intraday portfolio values are calculated every fifteen seconds.
- ETFs range in style, sector, country ranging from value, growth, international equity, commodity, and domestic to equity and fixed income.
- More and more specialty index funds created annually.

* Other structures include exchange traded unit investment trusts and exchange traded grantor trusts.



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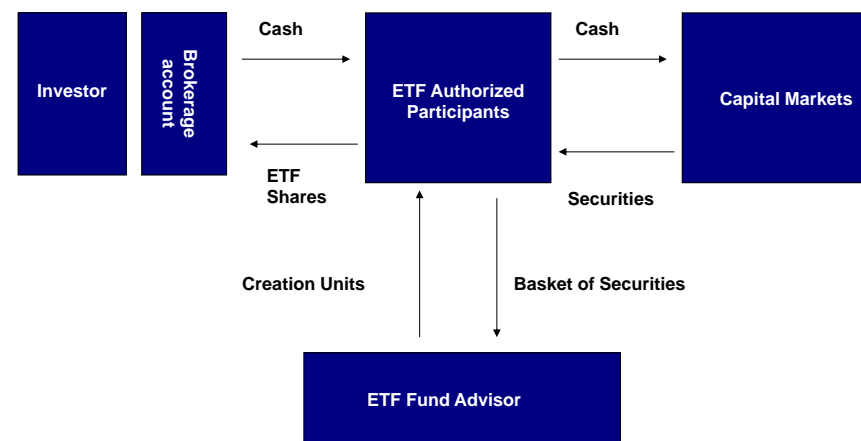
What Are ETFs?: Creation/Redemption Process

- Index provider (S&P, Dow Jones, etc.) announces changes in index.
- Fund manager (Barclays, State Street, etc.) announces the contents – holdings and wtds - of the new creation units.
- A Market Maker (authorized participant (AP)) buys basket of securities in market then delivers the basket to the fund (trustee), which creates and delivers to AP the appropriate ETF units.
- The AP receives newly created fund shares and makes available to investors.
- The ETF will be custodied wherever investor clears trade.



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What Are ETFs?: Creation Process



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ETF Structure

Participants :

- Fund manager** 
- ETF fund advisor** 
- Market maker** 
- Authorized participants (Participating dealers)**
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ETF structure

Participants

1. Fund Manager or Fund Advisor (FM) Minimizes tracking error
2. Participating Dealers (PD): Creators of investment units and redemption units.
3. Market Maker (MM) Supplies liquidity for ETF

ETF on SET50 (TDEX)

SET 50 ETF

- **Index multiplier** 1/100
- **IndexSET50** = 500
- **ETF 1 unit**= 5 THB ($500/100 = 5$)
- **Minimum price move** (Tick size) 0.01 บาท
- 1 (Board Lot) = 100 หน่วย
- **Min investment** = 500 THB ($5 \times 100 = 500$)

SET50 Index	Profit/(Loss)/unit (THB)	Profit/(Loss) to board lot (THB)
495	$4.95 - 5.00 = -0.05$	$(-0.05) \times 100 = -5.00$
505	$5.05 - 5.00 = 0.05$	$0.05 \times 100 = 5.00$

* Absent of fees

ETF vs open end fund

	ETF	Open end fund
Price	Continuous	End of day
Broker	Securities house	Securities house/Com. Bank
Forward market	√	X
Limit order	√	X
Margin	√	X
Cost	Low	Low-medium
Flexibility	Fixed fee	Fixed fee + Extras

Applications: Diversification

- Investment minimums
- Cost effective dynamic diversification
- Minimize concentrated portfolios
- Exploit global growth and currency opportunities



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Applications: Risk Management

- Real time risk management
- Dynamic beta adjustments
- Active indexing or “tilting”
- “Equitize” cash
- Limit and stop orders
- Hedging options



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ETF in Thailand (Oct 2010)

ชื่อ ETF (คลิกดูข้อมูลกองทุน)	ชื่อย่อหลักทรัพย์ (คลิกดูราคา)	บริษัทจัดการกองทุน (คลิกดูข้อมูลบริษัท)	ดัชนีอ้างอิง (คลิกดูราคาดัชนี)	วันที่ จดทะเบียน
กองทุนเปิดไทยดีเอส เซ็ท 50 อีทีเอฟ	TDEX	บริษัทหลักทรัพย์จัดการกองทุนรวม วรชน จำกัด	SET50 Index	6 กันยายน 2550
กองทุนเปิด MTRACK ENERGY ETF	ENGY	บริษัทหลักทรัพย์จัดการกองทุน ไทยพาณิชย์ จำกัด	SET Energy & Utilities Sector Index	7 สิงหาคม 2551
กองทุนเปิดไทยดีเอส FTSE SET LARGE CAP ETF	TFTSE	บริษัทหลักทรัพย์จัดการกองทุนรวม วรชน จำกัด	FTSE SET Large Cap Index	5 สิงหาคม 2552
กองทุนเปิดดับเบิลยูไอเอสซี แคแทม ซีเอสไอ 300 ไชนา เมร์กเกอร์	CHINA	บริษัทหลักทรัพย์จัดการกองทุน ไทยพาณิชย์ จำกัด (มหาชน)	W.I.S.E. – CSI 300 China Tracker	22 พ.ย. 2553



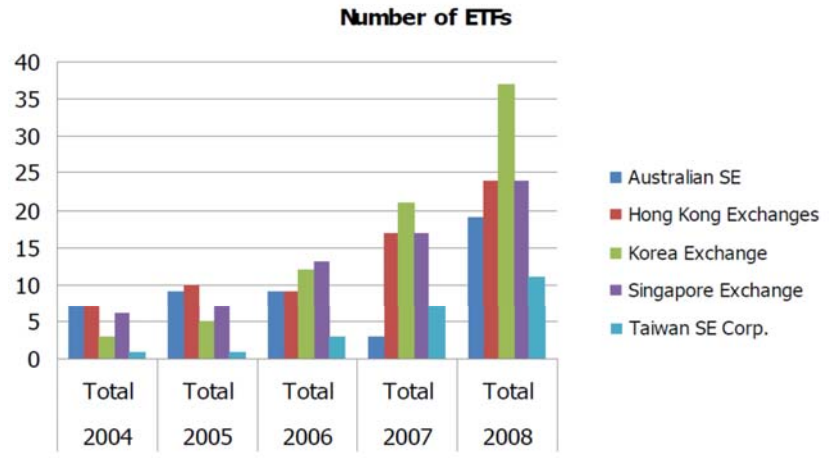
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ETF listings by exchange in Asia (ex-Japan) (Oct-09)

Exchange	Primary local listing	AUM (US\$ bn.)	Cross listing	# Total ETF listings	Remarks
Australian SE	4	2.2	21	25	
Hong Kong Exchange	16	20.3	21	37	Lyxor AM / db-X tracker (ค่ายยุโรป) นำ ETF มา cross-list มากที่สุดใน 2 ตลาดนี้
Singapore SE	8	2.3	32	40	
Taiwan SE	12	2.5	2	14	เริ่ม cross-list กับ HKEX 2 กอง
Shanghai SE	3	3.8	-	3	มีแผนออกกว่า 10 กองในปี 2010
Shenzhen SE	2	1.4	-	2	
Bombay SE	2	0.01	-	2	
NSE (India)	10	0.2	-	10	
Indonesia SE	1	0.002mn.	-	1	
Bursa Malaysia	3	0.3	-	3	
New Zealand SE	6	0.5	-	6	
Korea Exchange	46	3.3	-	46	
SET	3	0.07	-	3	TDEX, ENGY, TFTSE [ABFTH (BEX)]



ETFs around the world



(US\$ mn.)

Top 10 ETFs Trading	Daily Avg. Trading (Jan-Oct 09)	AUM
SPDR S&P 500	22,829	69,228
PowerShares QQQ Trust	4,624	16,649
iShares MSCI Emerging Markets Index Fund	3,531	36,125
iShares Russell 2000 Index Fund	3,481	11,255
Direxion Daily Financial Bull 3x Shares	2,796	1,361
ProShares UltraShort S&P 500	1,872	3,487
Direxion Daily Financial Bear 3x Shares	1,821	1,099
iShares MSCI Brazil Index Fund	1,671	10,820
Financial Select Sector SPDR Fund	1,637	6,873
Energy Select Sector SPDR Fund	1,320	5,635