

Option Structures

Singapore Management University

QF 301

Saurabh Singal

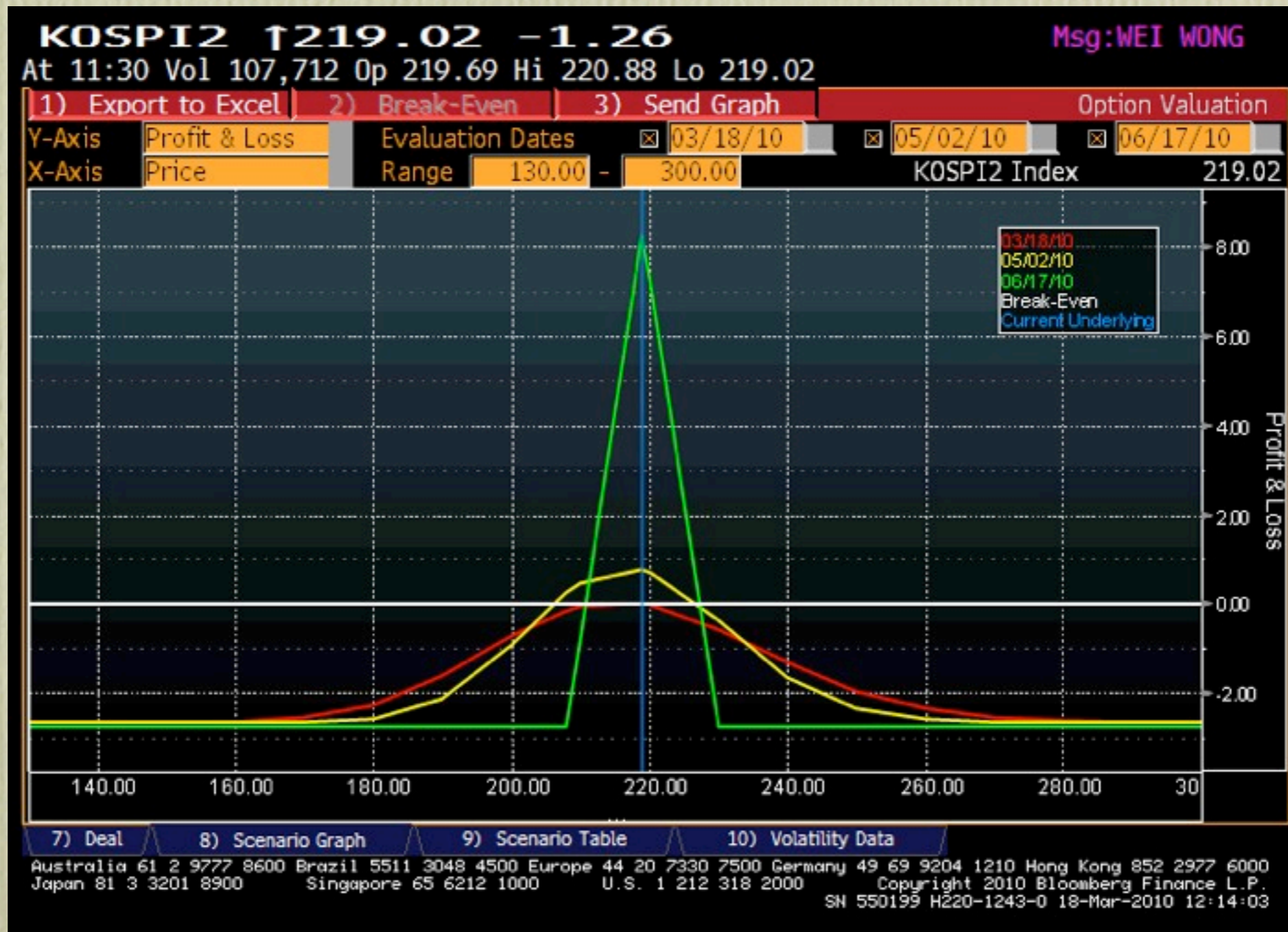
Options Structures

- The simple structures will be the most important ones to master
- These are the building blocks of the more difficult structures.
- Visualize shape and behaviour, not just look at only the equations.
- The mathematical equations VERY important! Ignore and perish...

Butterfly on Bloomberg (OVME)

KOSPI2 ↑219.02 -1.26		Index OVME	
At 11:30 Vol 107,712 Op 219.69 Hi 220.88 Lo 219.02			
1) Actions		2) Strategies	
3) Str. Notes		4) Data & Setting	
5) Help		Option Valuation	
Underlying	KOSPI2 Index	KOSPI 200 INDEX	Trade 03/18/10 11:50
Price	219.02	KRW	Settle 03/19/10
Net Option Values		85) Solve For	86) Refresh
7) Add to Portfoli		89) Trade	
Price (Total)	-8.219922	Currency	KRW
Price (Share)	-8.219922	Vega	-0.12
Price (%)	-3.753046	Delta (%)	-2.34
		Gamma (%)	-1.3832
		Theta	-0.01
		Rho	0.01
		Time value	-8.22
Butterfly	Leg 1	Leg 2	Leg 3
			Leg 4
Style	Vanilla		
Exercise	European		
Call/Put	Call	Put	Call
			Put
Direction	Buy		Sell
Strike	229.97	208.07	219.02
Strike % Money	5.00% OTM	5.00% OTM	ATM
Shares	1.00		1.00
Expiry	06/17/10		
Time to expiry	90		
Model	BS - continuous		
Volatility Market	17.152%	19.077%	17.697%
KRW Rate MMkt	2.819%		
Dividend yield	0.297%		
Forward implied	220.3306		
7) Deal	8) Scenario Graph	9) Scenario Table	10) Volatility Data
Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000			
Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000			
Copyright 2010 Bloomberg Finance L.P. SN 550199 H220-1243-0 18-Mar-2010 12:13:04			

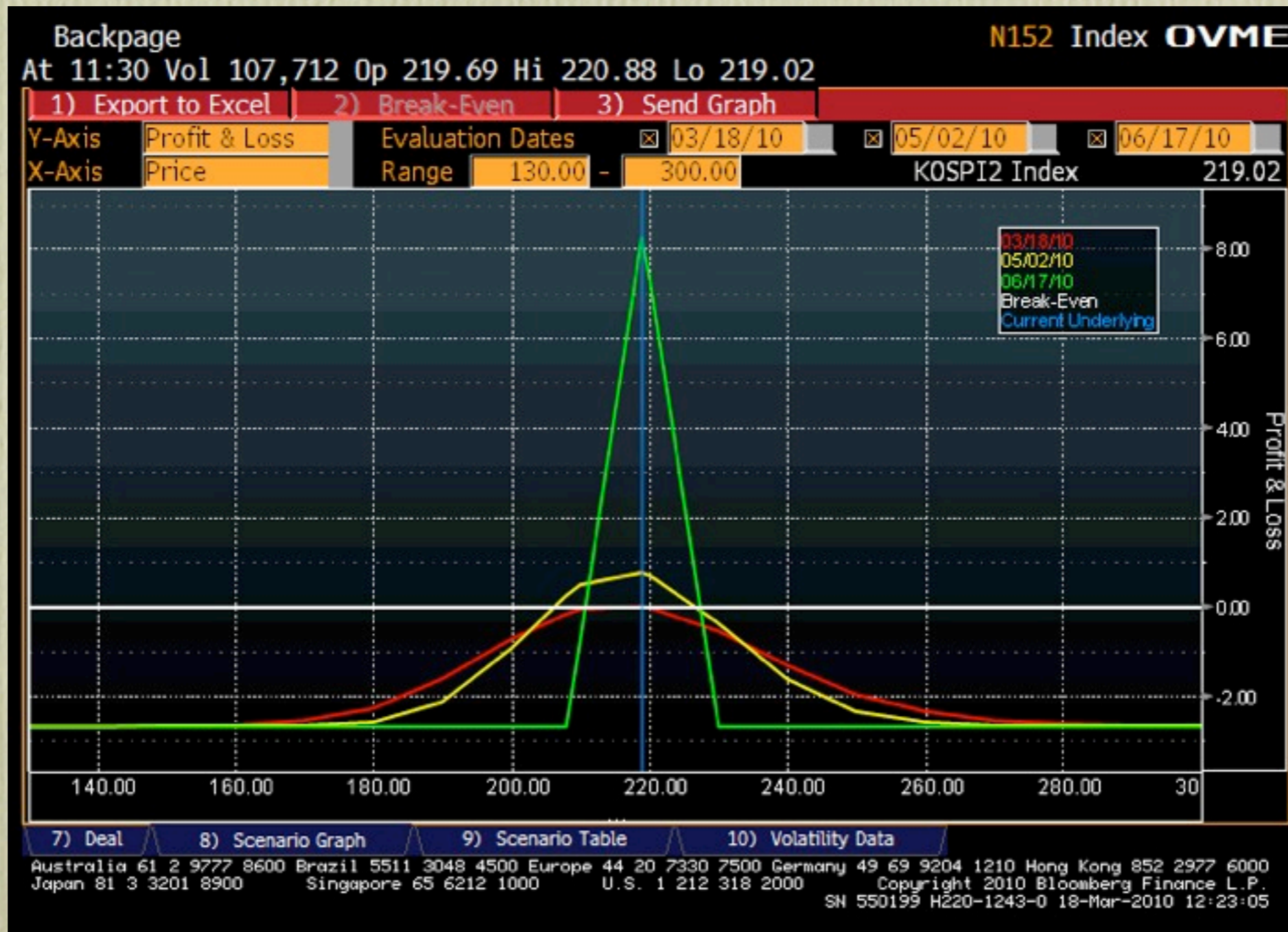
Butterfly Scenario Analysis



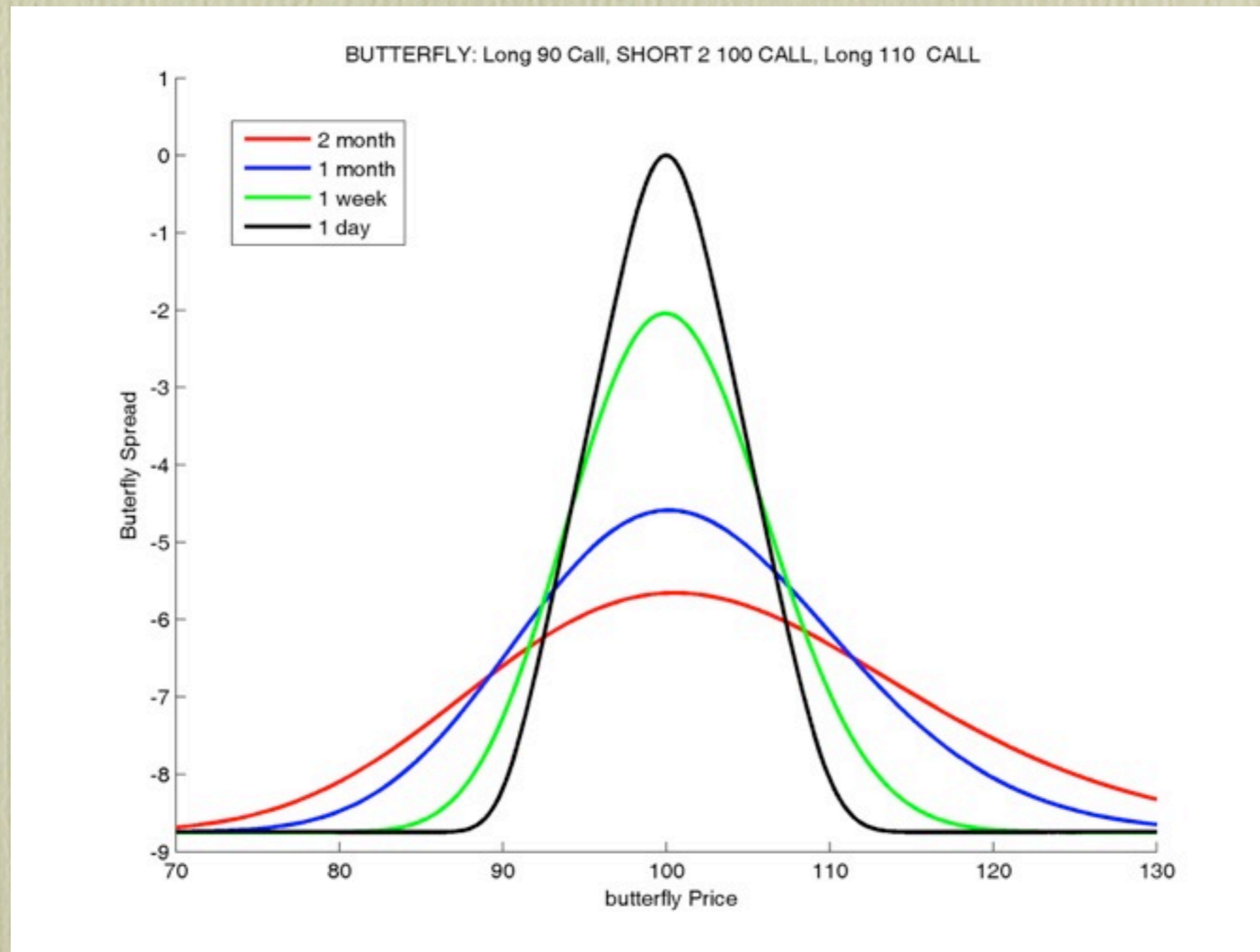
Butterfly Spread on Bloomberg (OVME)

KOSPI2 ↑219.02 -1.26				Index OVME							
1) Actions		2) Strategies		3) Str. Notes		4) Data & Setting		5) Help		Option Valuation	
Underlying	KOSPI2 Index		KOSPI 200 INDEX		Trade	03/18/10		12:22			
Price	219.02		KRW		Settle	03/19/10					
Net Option Values				85) Solve For	86) Refresh	7) Add to Portfolio		89) Trade			
Price (Total)	2.675751		Currency	KRW		Vega	-0.12		Time value	-8.28	
Price (Share)	2.675751		Delta (%)	-2.32		Theta	-0.01				
Price (%)	1.221693		Gamma (%)	-1.3951		Rho	-0.02				
Butterfly Spread	Leg 1		Leg 2		Leg 3						
Style	Vanilla										
Exercise	European										
Call/Put	Call										
Direction	Buy		Sell								
Strike	229.97		208.07		219.02						
Strike % Money	5.00% OTM		5.00% ITM		ATM						
Shares	1.00		1.00		2.00						
Expiry	06/17/10				11:45						
Time to expiry	90				23:23						
Model	BS - continuous										
Volatility Market	17.162%		19.059%		17.674%						
KRW Rate Mkt	2.819%										
Dividend yield	0.297%										
Forward implied	220.3306										
7) Deal		8) Scenario Graph		9) Scenario Table		10) Volatility Data					
<small> Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2010 Bloomberg Finance L.P. SN 550199 H220-1243-0 18-Mar-2010 12:22:32 </small>											

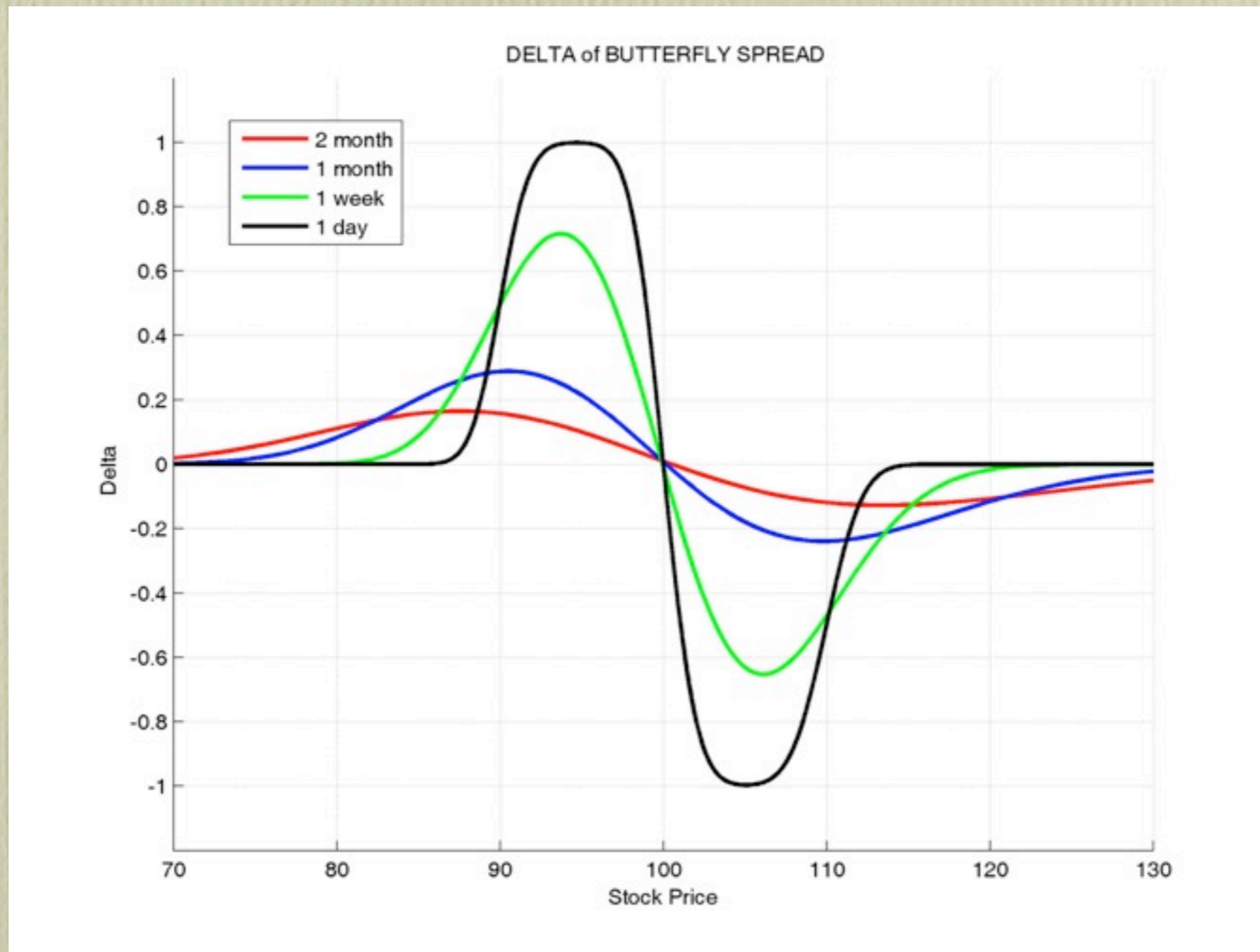
Butterfly Spread on Bloomberg (OVME)



Butterfly Spread (P&L)



Butterfly Spread (Delta)



Risk Reversal on Bloomberg

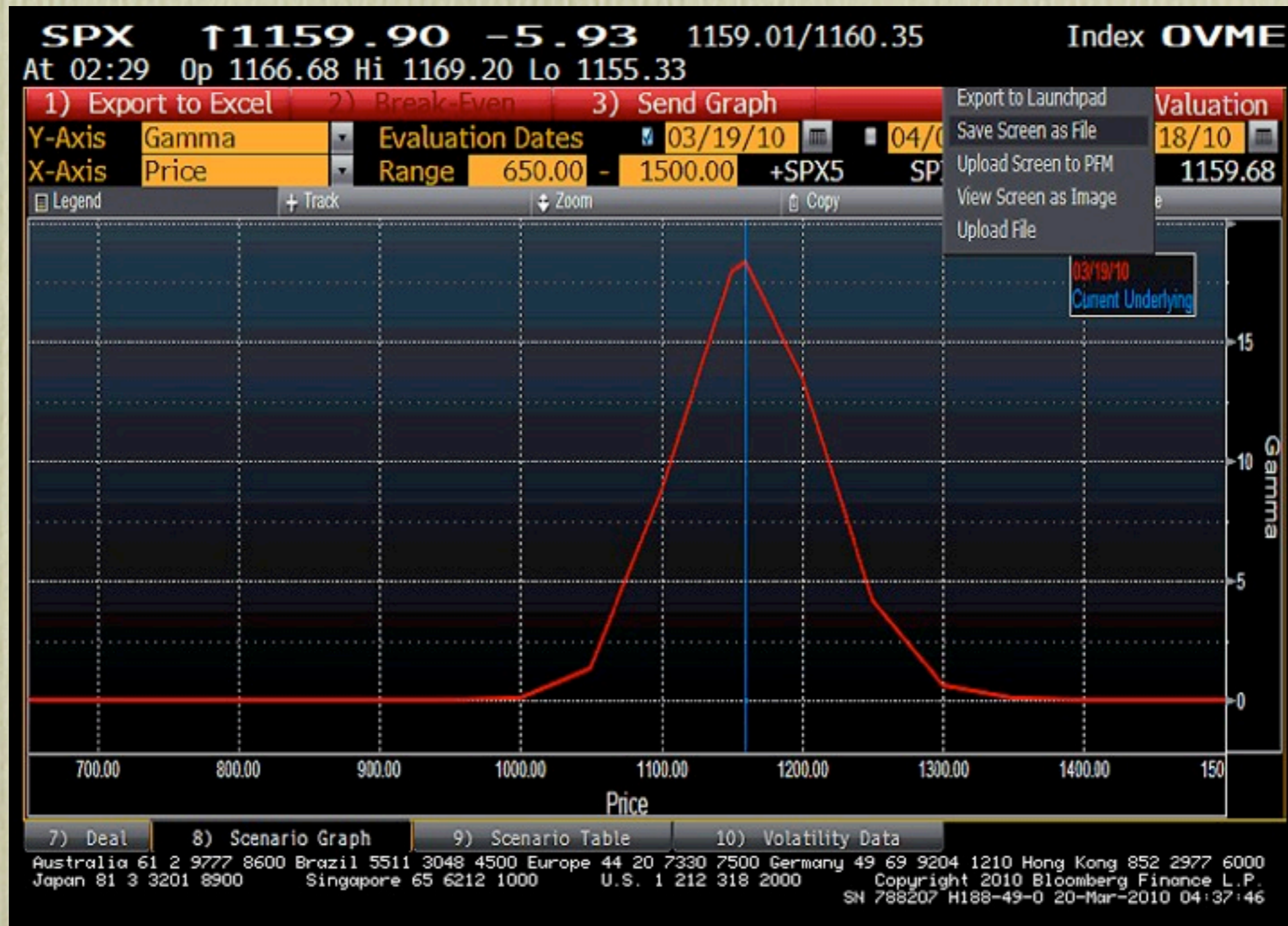
SPX 1166.21Y as of close 3/17 Msg:W.CROSSWHIT

1) Actions		2) Strategies		3) Str. Notes		4) Data & Setting		5) Help		Option Valuation	
Underlying	SPX Index	S&P 500 INDEX		Trade	03/18/10	13:23					
Price	1166.17	USD		Settle	03/18/10						
Net Option Values				85) Solve For	86) Refresh	7) Add to Portfolio		89) Trade			
Price (Total)	-7.112438	Currency	USD	Vega	-0.11	Time value		-7.11			
Price (Share)	-7.112438	Delta (%)	53.94	Theta	-0.07						
Price (%)	-0.609897	Gamma (%)	0.5270	Rho	1.58						
Risk Reversal		Leg 1		Leg 2							
Style	Vanilla										
Exercise	European										
Call/Put	Call			Put							
Direction	Buy			Sell							
Strike	1224.48			1107.86							
Strike % Money	5.00% OTM			5.00% OTM							
Shares	1.00										
Expiry	06/17/10			01:45							
Time to expiry	90			12:22							
Model	BS - continuous										
Volatility Market	15.189%			18.419%							
USD Rate MMkt	0.263%										
Dividend yield	1.855%										
Forward implied	1161.5894										
7) Deal		8) Scenario Graph		9) Scenario Table		10) Volatility Data					
<small> Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2010 Bloomberg Finance L.P. SN 788207 C354-49-0 18-Mar-2010 13:24:09 </small>											

Risk Reversal Graph

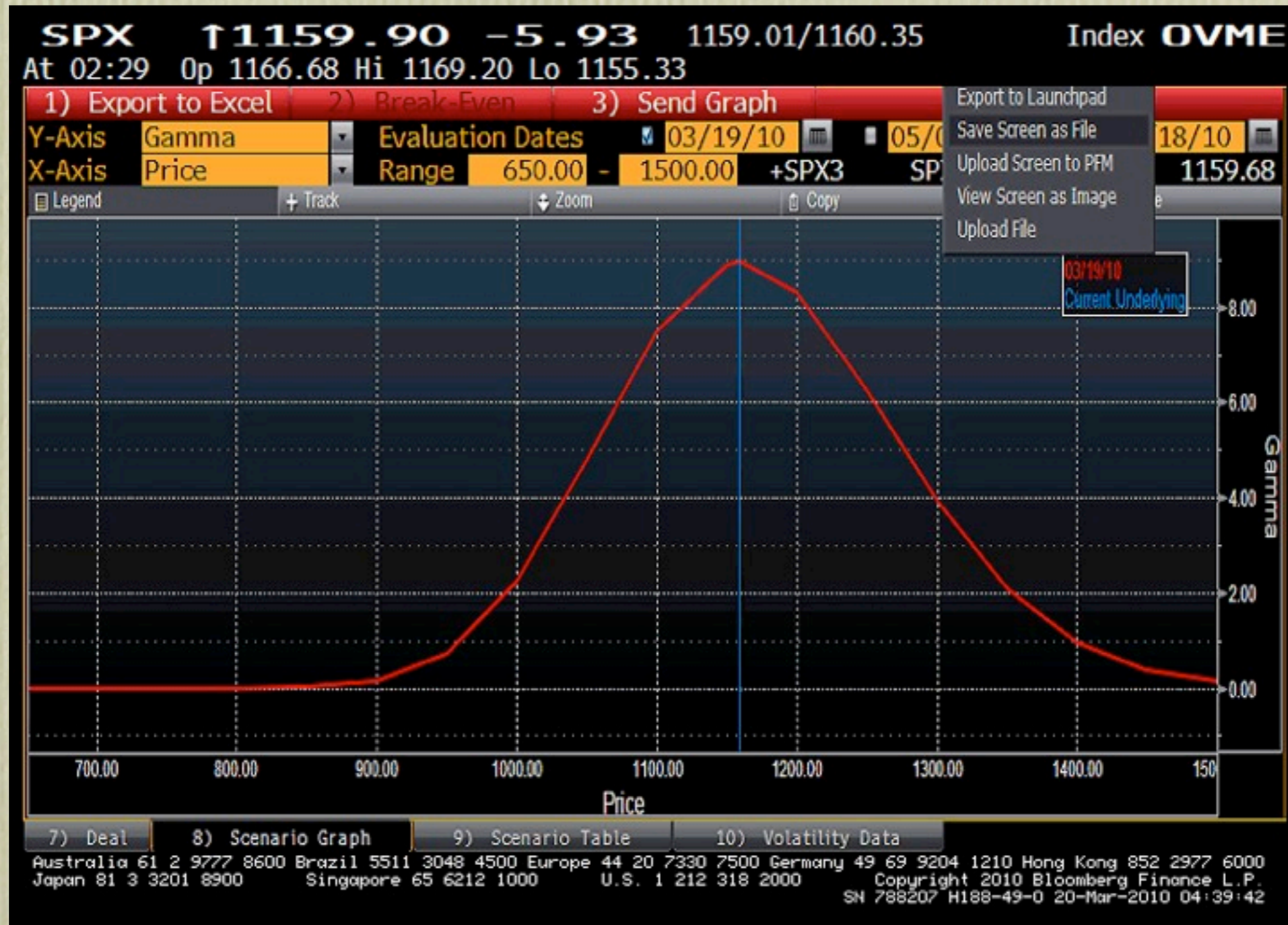


Positive Gamma yet Negative Vega...



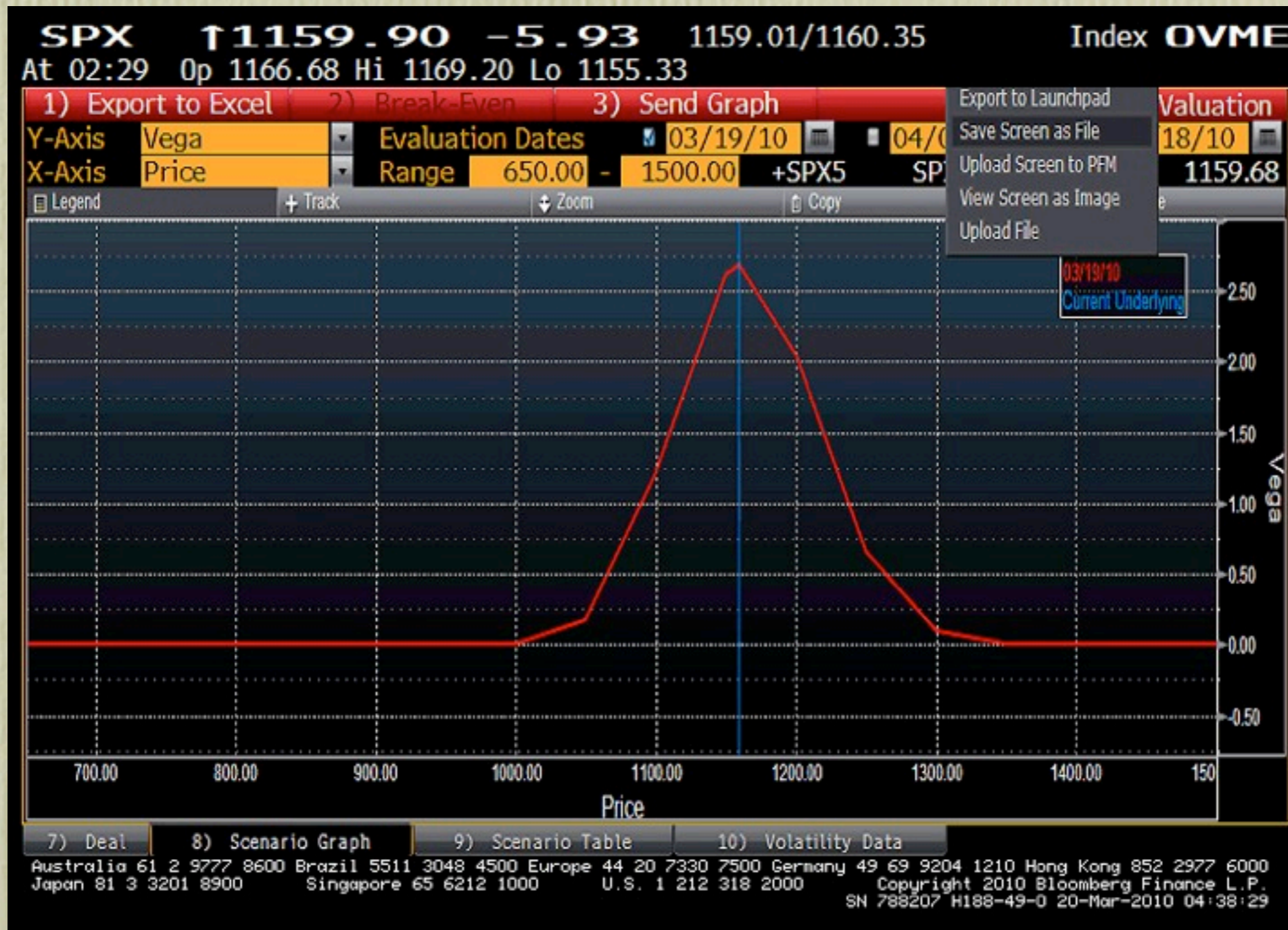
- April Straddle: Gamma

Positive Gamma yet Negative Vega (2)...



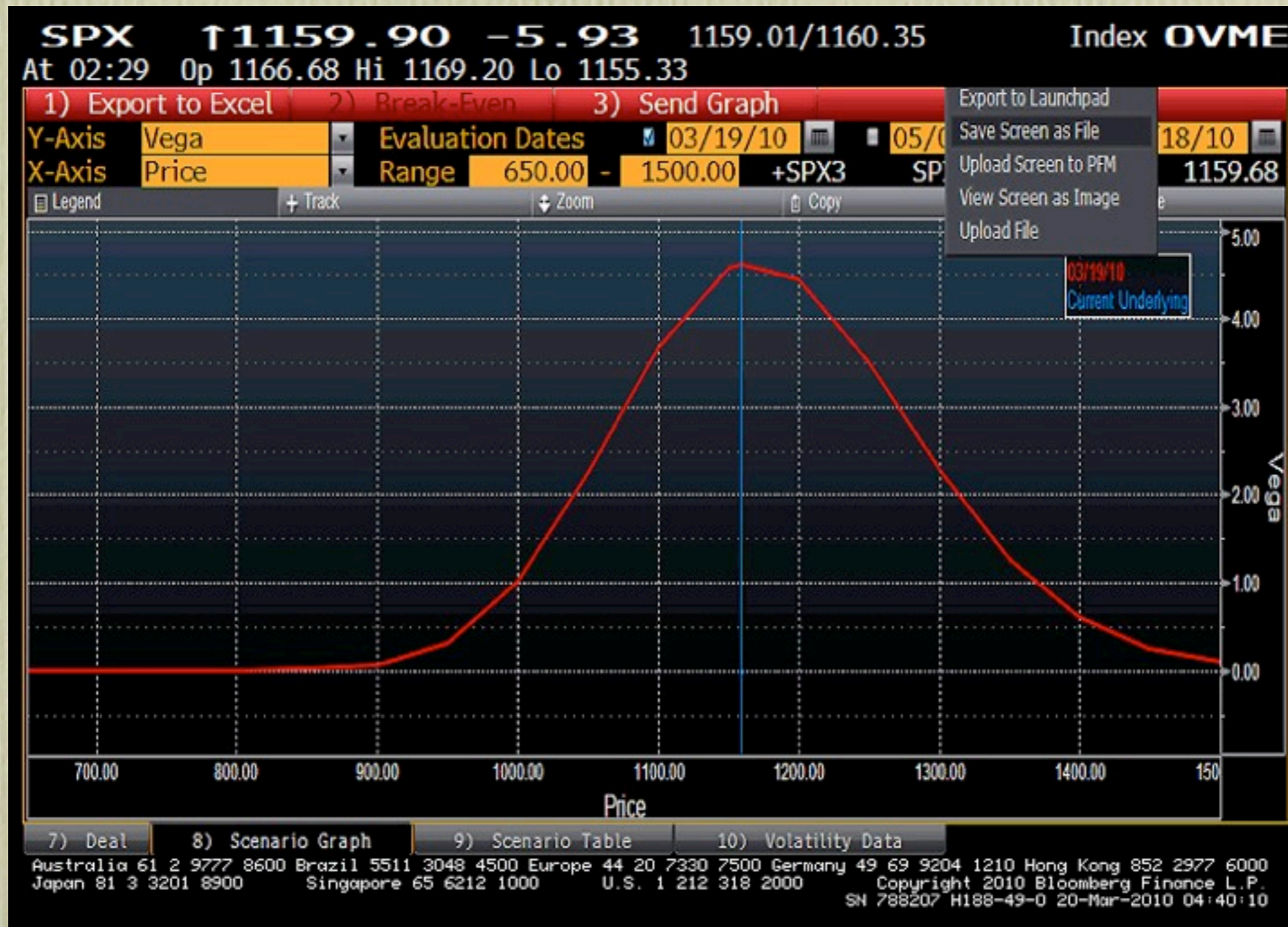
- June Straddle: Gamma

Positive Gamma yet Negative Vega(3)...



- April Straddle: Vega

Positive Gamma yet Negative Vega(4)...



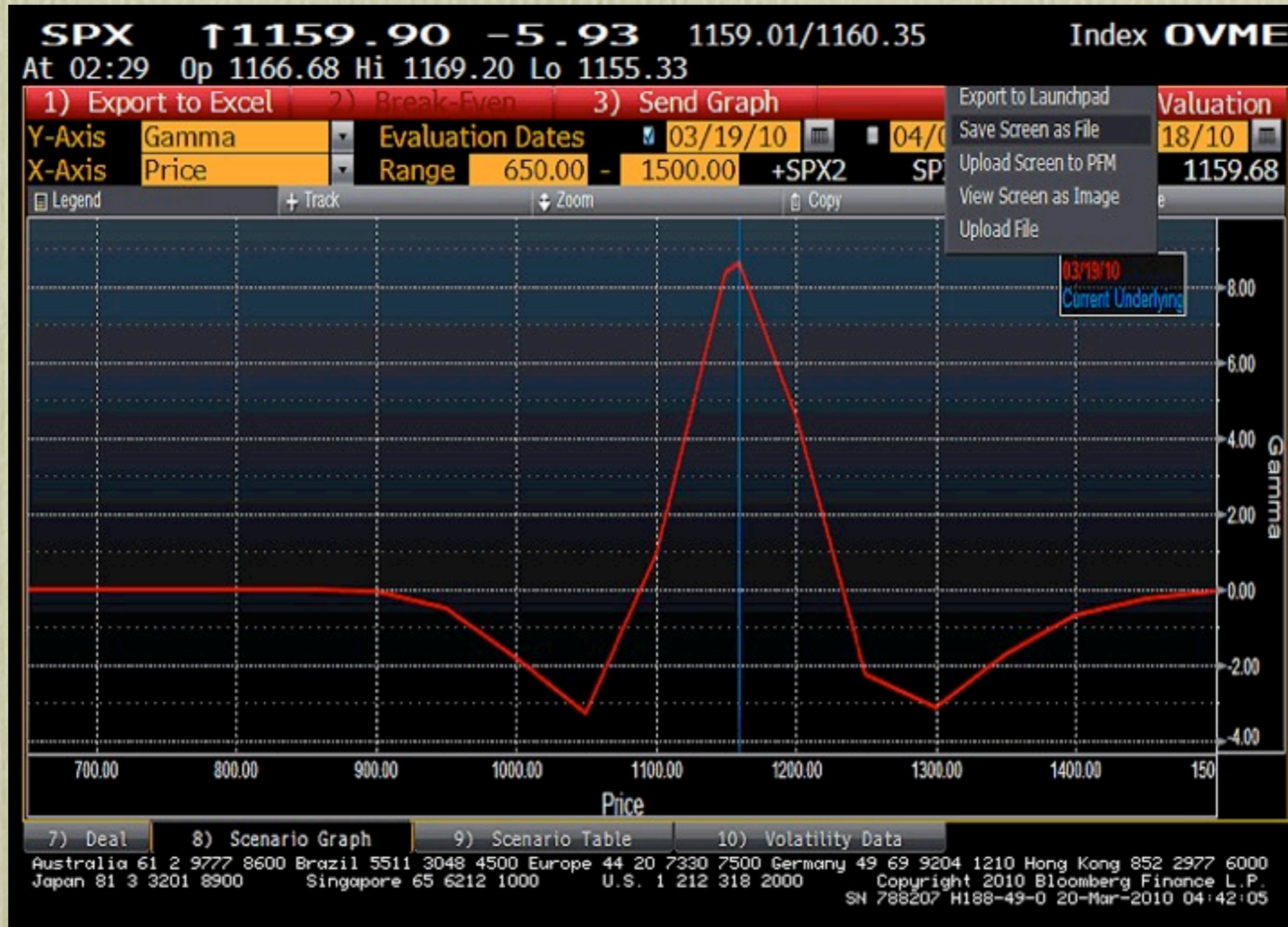
- June Straddle: Vega

Positive Gamma yet Negative Vega(5)..

SPX ↑1159.90 -5.93 1159.01/1160.35		Index OVME	
At 02:29 Op 1166.68 Hi 1169.20 Lo 1155.33			
1) Actions · 2) Strategies · 3) Str. Notes · 4) Data & Settings ·		Export to Launchpad	
Underlying	SPX Index	+SPX2 4 leg 2 straddle	Valuation
Price	1159.68 USD	BB Id IS1478945	04:40
Net Option Values		85) Solve For · 86) Refresh · 87)	89) Trade ·
Price (Total)	-35.97973	Currency USD	Vega -1.95
Price (Share)	-35.97973	Delta (%) 0.52	Theta 0.25
Price (%)	-3.102557	Gamma (%) 8.9342	Rho 0.17
Four Leg	Leg 1	Leg 2	Leg 3
Style	Vanilla	Vanilla	Vanilla
Exercise	European	European	European
Call/Put	Call	Put	Put
Direction	Buy	Buy	Sell
Strike	1159.68	1159.68	1159.68
Strike % Money	ATM	ATM	ATM
Shares	1.00	1.00	1.00
Expiry	04/19/10 01:45	04/19/10 01:45	06/19/10 01:45
Time to expiry	29 21:05	29 21:05	90 21:05
Model	BS - continuous	BS - continuous	BS - continuous
Volatility Market	14.936%	14.936%	16.381%
USD Rate MMkt	0.243%	0.243%	0.275%
Dividend yield	1.591%	1.591%	1.958%
Forward implied	1158.5123	1158.5123	1154.9875
7) Deal	8) Scenario Graph	9) Scenario Table	10) Volatility Data
Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000			
Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000			
Copyright 2010 Bloomberg Finance L.P. SN 788207 H188-49-0 20-Mar-2010 04:40:44			

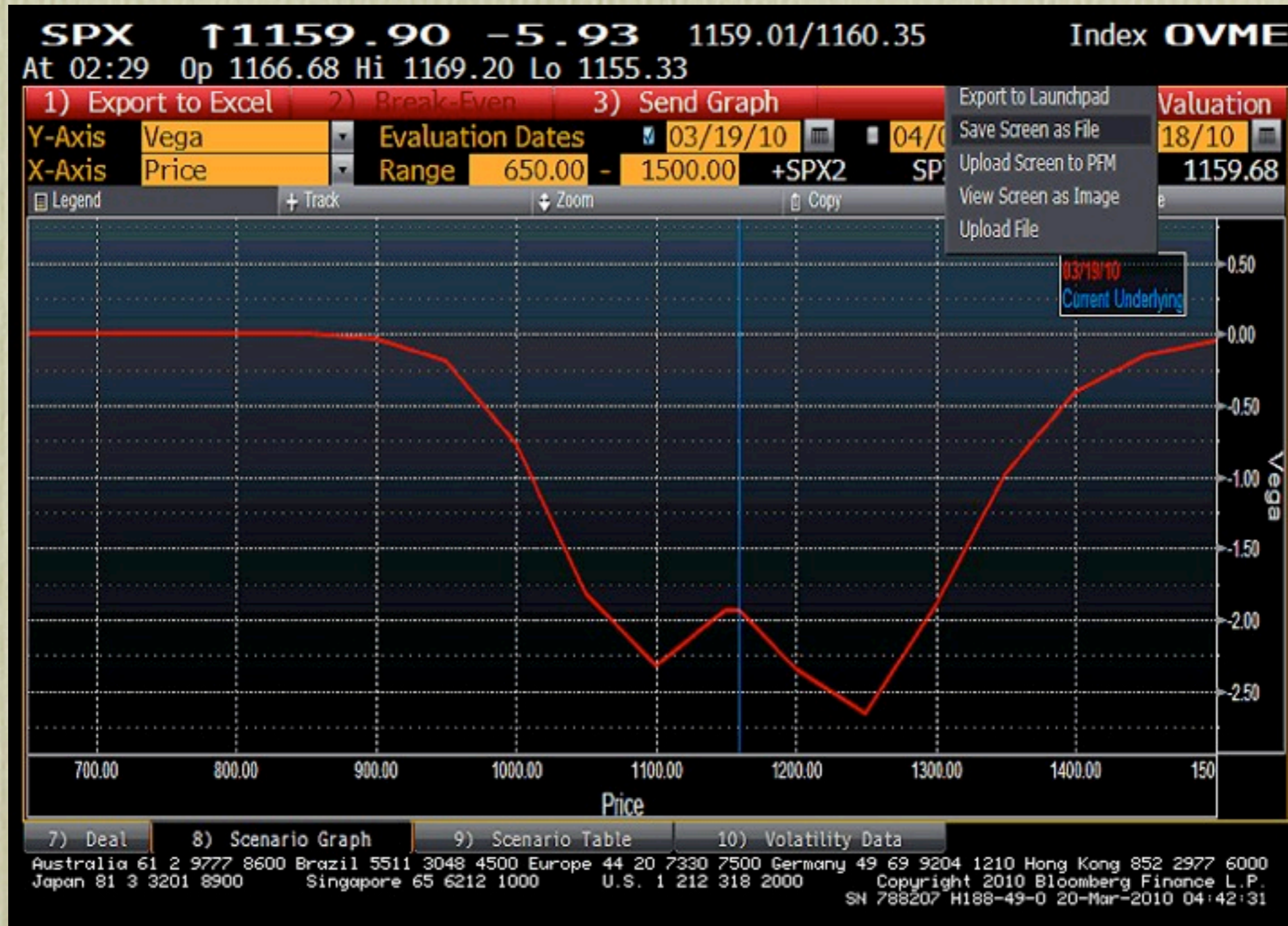
- 4-Leg Deal: Long April Straddle, Short June Straddle.

Positive Gamma yet Negative Vega(6)..



- 4 Leg Deal Gamma

Positive Gamma yet Negative Vega(8)..



- 4 Leg Deal Vega

Positive Gamma yet Negative Vega (9)...



- 4 Leg Deal P&L