3 VaR Methodologies

Capital Market Risk Advisors

Variance Covariance

Variance Covariance multiplies market value position exposures by the standard deviation of price changes.

Position Exposures	⇨	Volatilities $\sigma * 2.33 = 99\%$	⇨	Correlations	= VAR

CAPITAL MARKET RISK ADVISORS

Position Inputs
Sensitivity Approach

Position	Delta Equivalent
Interest Rate Position	Dollar Value per Basis Point Change in Rate
Foreign Exchange Equity Commodity	Dollar Value of the Position
Options	Dollar Value Adjusted for Option Delta Plus Gamma Expressed as a Change in Delta

CAPITAL MARKET RISK ADVISORS

Delta Equivalent Examples

Examples:

$1MM 10 Year USD Swaps ==> $760/basis point

1,000 shares IBM stock at $180/share => 1,000 * $180 =>$180,000

ATM options on 1,000 shares of IBM stock; delta .45 =>
1,000 *.45 * $180 => $81,000

100 S&P 500 futures => 500 * $1,350 => $675,000

CAPITAL MARKET RISK ADVISORS

Position Sensitivity Aggregation

Position sensitivities can be added together to represent a portfolio level sensitivity to changes in underlying market prices.

Examples:

$1MM 10 Year USD Swaps	==> $760/basis point
$1MM 5 Year USD Swaps	==> $430/basis point
$1MM 2 Year USD Swaps	==> $185/basis point
Total Swaps Portfolio	==> $1,375/basis point

CAPITAL MARKET RISK ADVISORS

Variance Covariance VAR Example
One Asset

Position	Delta Equivalent	One Week Volatility	Risk
1,000 shares IBM Stock @ $180/Share	1,000 * $180 = $180,000	10%	$180,000 * 10% = $18,000

Variance Covariance VAR Example
Two Assets

Position	Delta Equivalent	One Week Volatility	Risk
1,000 shares IBM Stock @ $180/Share	1,000 * $180 = $180,000	10%	$180,000 * 10% = $18,000
$10mm 10 Yr US Treasury Note	$760/bp * 10 = $7,600/bp	10 bps	$7,600/bp * 10 = $76,000
Portfolio Risk			$84,820

$$\sqrt{180{,}000^2 .10^2 + 7{,}600^2 10^2 + 2(180{,}000 \times 7{,}600 \times .10 \times 10 \times .4)} = \$84{,}820$$

CAPITAL MARKET RISK ADVISORS

Variance Covariance VAR Example
Three Assets

Position	Delta Equivalent	One Week Volatility	Risk
1,000 shares IBM Stock @ $180/Share	1,000 * $180 = $180,000	10%	$180,000 * 10% = $18,000
$10mm 10 Yr US Treasury Note	$760/bp * 10 = $7,600/bp	10 bps	$7,600/bp * 10 = $76,000
45 3 Month Eurodollar Futures	$25/bp * 45 = $1,125/bp	6bps	-$1,125/bp * 6 = -$6,750
Portfolio Risk			$88,875

$$\Big(180{,}000^2.10^2 + 7{,}600^2 10^2 + 1{,}125^2 6^2 + 2(180{,}000 \times 7{,}600 \times .10 \times 10 \times .4) + 2(180{,}000 \times -1{,}125 \times .10 \times 6 \times .6) + 2(7{,}600 \times -1{,}125 \times 10 \times 6 \times .5) \Big)^{\frac{1}{2}} = \$88{,}875$$

CAPITAL MARKET RISK ADVISORS

VAR Estimation Period

To estimate longer period VAR from One Day VAR, you multiply the One Day VAR by the square root of the estimation period (expressed as # of days).

Finding 1 Year VAR

1 Year VAR	**= 1 Day VAR * SQRT(250)**
	= $88,875 * SQRT (250)
	= $1.41mm

Time Adjustment

1 week	**sqrt(5)**
1 month	**sqrt(21)**
3 month	**sqrt(62.5)**
1 year	**sqrt(250)**

CAPITAL MARKET RISK ADVISORS

Variance Covariance
VAR Result

Finding *x*% Confidence VAR

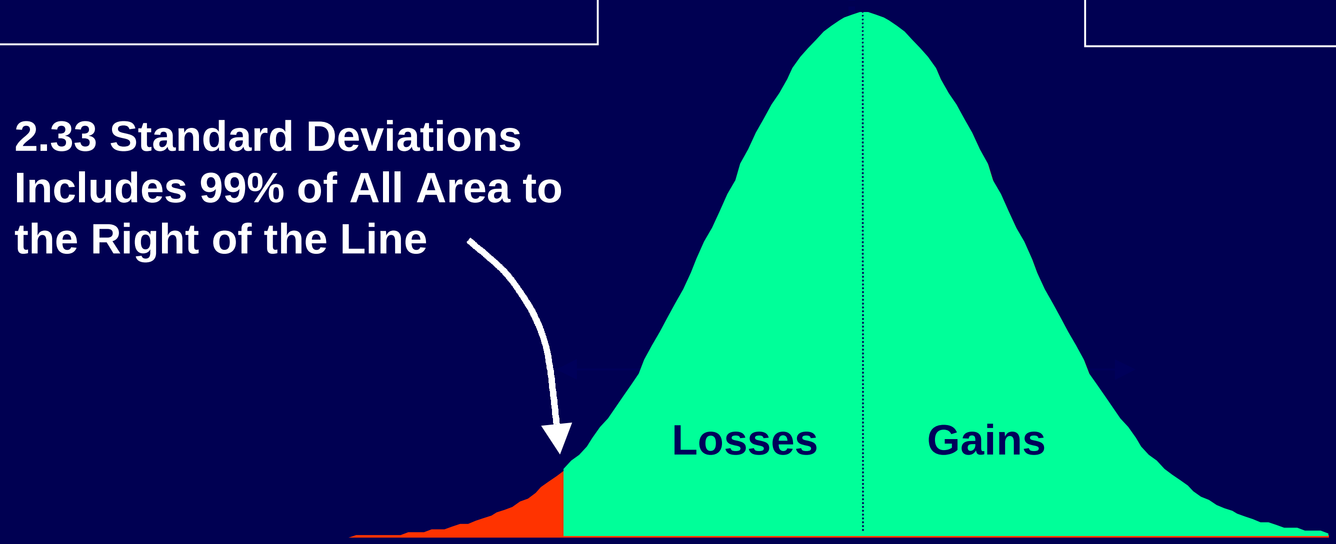
99% VAR = VAR Result * 2.33

= $1.41 * 2.33

= $3.27MM

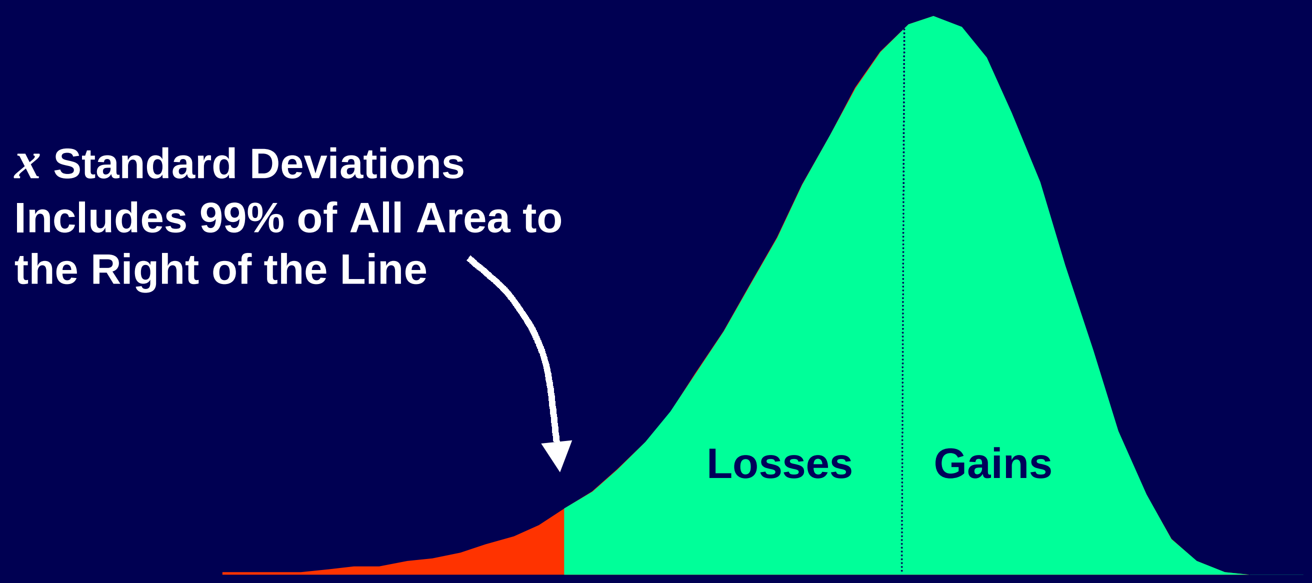
Z-Result

Confidence	# of σ's
84%	1.00
90%	1.28
95%	1.65
97.5%	1.96
99%	2.33



Variance Covariance
Convexity Adjustment

- The VAR result can be adjusted to account for some skewness in the distribution caused by the convexity of bonds and options.
- The adjustment however, is an approximation and does not account for the risks of complex derivative products.



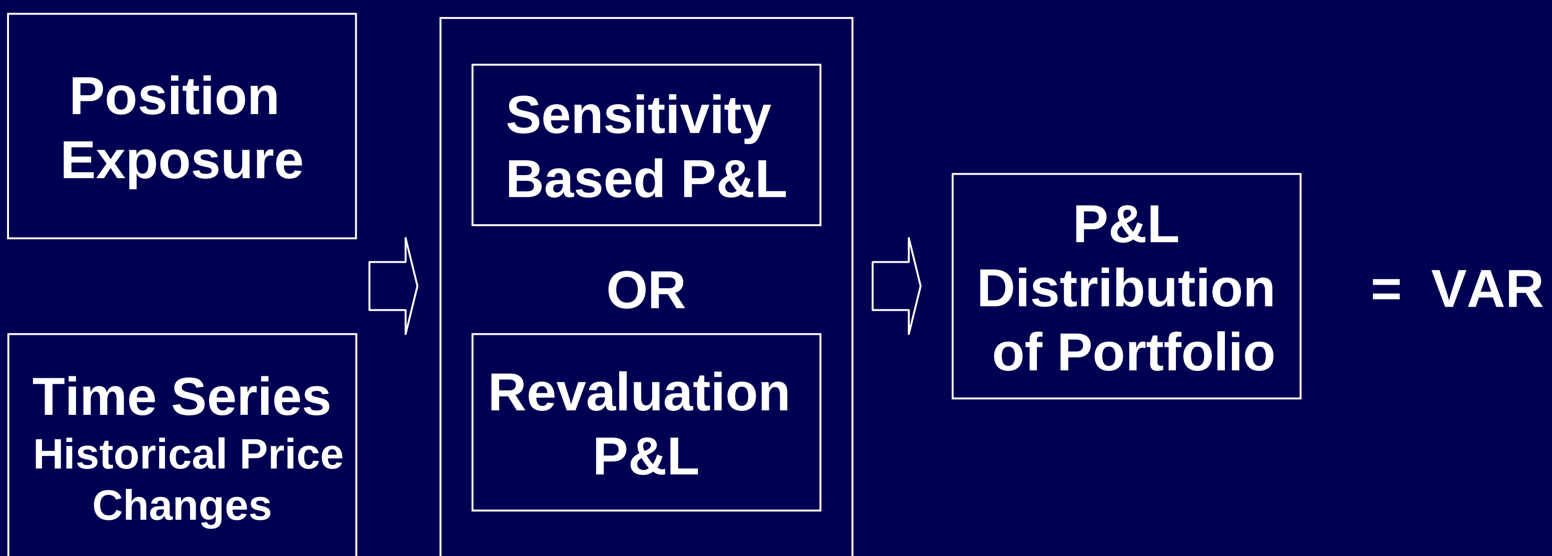
Variance Covariance

Advantages	Disadvantages
♦ Fast ♦ Relatively easy to implement ♦ Requires only portfolio level sensitivities ♦ Can be modified to capture some measure of convexity ♦ Data sets are readily available	♦ Does not revalue positions ♦ Cannot account for complex or discontinuous payoffs ♦ Cannot incorporate multiple time horizons ♦ Assumes normal or normal-like distributions

CAPITAL MARKET RISK ADVISORS

Historic Simulation

Historic Simulation calculates the P&L for each day based on observed changes in price.



Historic Simulation
Advantages & Disadvantages

Advantages

- Makes no assumption about distributions (non parametric)
- Relies on volatility and correlation embedded in time series
- Captures fat tails (events) in price change distribution

Disadvantages

- VAR incorporates only historic changes in price
- Data intensive - needs many time series

CAPITAL MARKET RISK ADVISORS

Actual Price Changes

Historic Simulation relies on time series of actual price changes - it does not assume a normal distribution.

Date	Rate	Change
Jan2	6.25%	.10
Jan3	6.35%	.10
Jan4	6.40%	.05
Jan5	6.15%	-.25
.	.	.
.	.	.
.	.	.
Dec31	6.20%	-.10

CAPITAL MARKET RISK ADVISORS

Historic Simulation
Sensitivity Approach

Product	Position Size	Sensitivity
UST 10 Year Note 5.5%	$10MM	$7,600/bp

CAPITAL MARKET RISK ADVISORS

Sensitivity-Based P&L

Date	Price	Price	Rate	Change
Jan2	100	99	6.25%	.12
Jan3	101	97	6.35%	.10
Jan4	102	99	6.40%	.05
Jan5	101	98	6.15%	-.25
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
Dec31	100	94	6.20%	-.13

P&L = -$7,600 * 10bps = -$76,000

CAPITAL MARKET · RISK · ADVISORS

Estimate P&L for Each Day

Date	Price	Price	Rate	Change		P&L
Jan2	100	99	6.25%	.12	→	-91,200
Jan3	101	97	6.35%	.10	→	-76,000
Jan4	102	99	6.40%	.05	→	-38,000
Jan5	101	98	6.15%	-.25	→	190,000
.	.	.	.	.		.
.	.	.	.	.		.
.	.	.	.	.		.
Dec31	100	94	6.20%	-.13	→	98,800

CAPITAL MARKET RISK ADVISORS

Rank Order P&L Results

Date	Price	Price	Rate	Change		P&L	Ordered P&L
Jan2	100	99	6.25%	.10	→	-91,200	+190,000
Jan3	101	97	6.35%	.12	→	-76,000	+98,800
Jan4	102	99	6.40%	.05	→	-38,000	-38,000
Jan5	101	98	6.15%	-.25	→	190,000	.
.	.	.	.	.		.	.
.	.	.	.	.		.	.
.	.	.	.	.		.	-76,000
Dec31	100	94	6.20%	-.13	→	98,800	-91,200

CAPITAL MARKET RISK ADVISORS

x% Confidence VAR

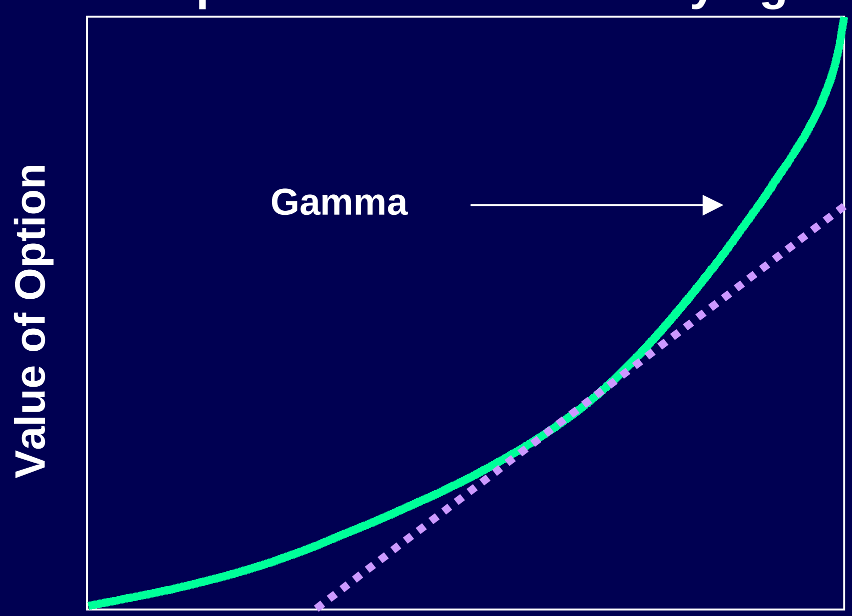
Date	Rank	P&L	
Jan 13	1	+229,000	
Mar 4	2	+217,500	
Jun 30	3	+215,300	
Oct 20	4	+199,100	
…	…	…	
Jul 7	950	-125,000	◄ 95% VAR
…	…	…	
Mar 12	990	-180,000	◄ 99% VAR
…	…	…	
Apr 19	998	-221,000	
Apr 2	999	-239,000	
Dec 21	1,000	-308,400	

CAPITAL MARKET RISK ADVISORS

Gamma VAR

Unlike the Variance Covariance approach, the Historic Simulation Sensitivity approach can produce VAR results that fully account for option convexity.

Option Price vs. Underlying



CAPITAL MARKET RISK ADVISORS

Sensitivity P&L

$$\text{VAR} \equiv \text{delta}\left(P_t - P_{t-1}\right)$$

Sensitivity to a Unit Change in Price

Historic Change in Price

Sensitivity P&L with Gamma Adjustment

$$\text{VAR} \equiv \text{delta}\left(P_t - P_{t-1}\right) + \tfrac{1}{2}\,\text{gamma}_{\,\text{i}}\left(P_t - P_{t-1}\right)^2$$

The first term multiplies the position by the change in price/rate. This calculates the P&L of the positions for the delta risk only. For assets that are not interest rate sensitive and are not options, this is the total P&L.

The second term then adds or subtracts an amount to adjust for the convexity or gamma effect. If the portfolio is net long options and interest rate sensitive assets, the second term reduces loss/increases the gain and thus the risk. If the portfolio is net short interest rate sensitive positions and options, the second term increases the loss/reduces the gain and risk goes up.

CAPITAL MARKET RISK ADVISORS

P&L Example
Using Taylor's Expansion

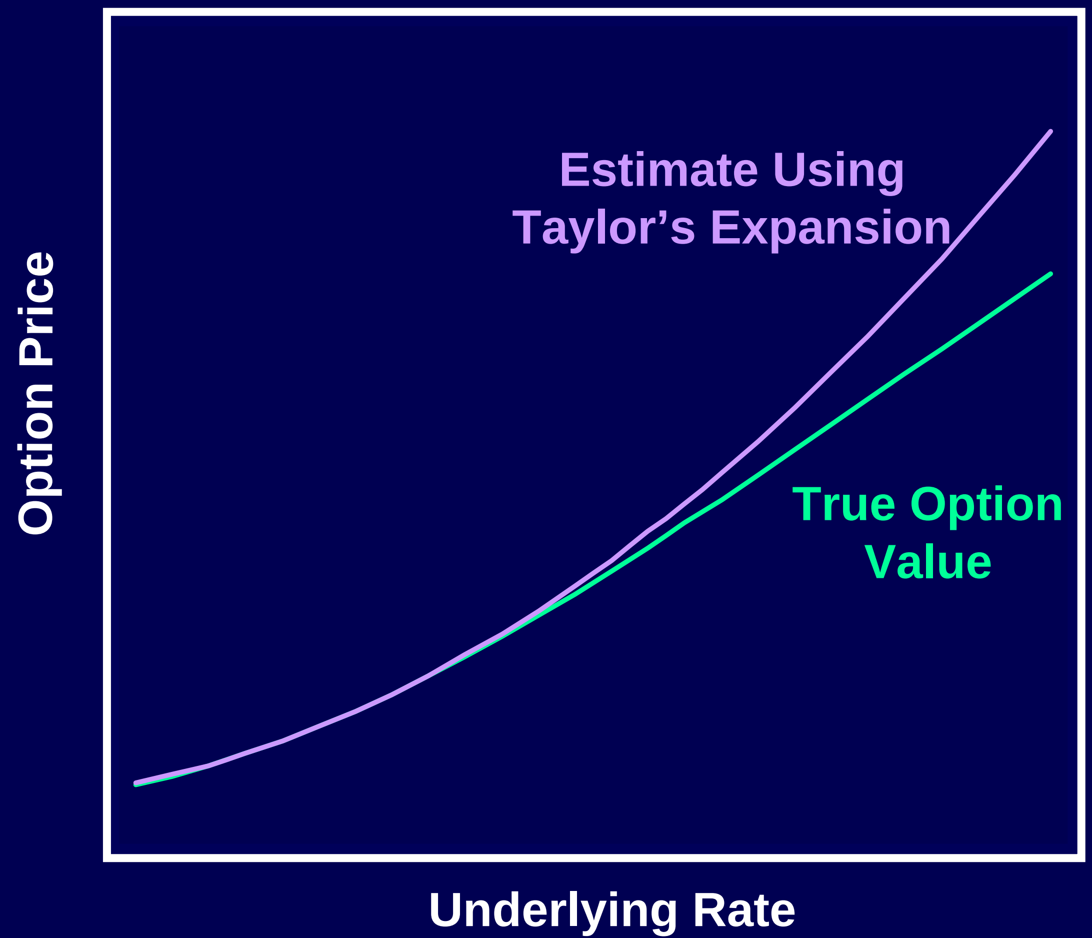
Sample Position

Sensitivity	Position Size	Sensitivity	Daily Volatility	1 Day VAR
Delta Risk (Duration)	$10MM	$7,600/bp	10 basis points	$76,000
Gamma Risk (Convexity)	$10MM	-$400 for 10 bps	10 basis points	$2,000
TOTAL	$10MM	na	10 basis points	$78,000

$$-\$7,600 * 10\text{bps} + \tfrac{1}{2} * -400 / 10 * 10^2 = -\$78,000$$

CAPITAL MARKET RISK ADVISORS

Taylor's Estimation



Estimation Error
One Gamma Taylor's

Stock Price	Black & Scholes	Taylor's Estimate	% Difference
85	.06	2.53	?
90	.36	.83	?
95	1.40	1.39	1%
100	3.64	3.64	0%
105	7.13	7.20	1%
110	11.51	12.07	5%
115	16.30	18.26	12%
120	21.25	25.77	22%

CAPITAL MARKET RISK ADVISORS

Multiple Gamma Inputs

The accuracy of the Taylor's estimate can be improved by applying gamma sensitivities for multiple shifts in the underlying.

Change in Underlying Rate

	-75	-25	-10	0	+10	+25	+75
Value of 01	$4,000	$5,800	$6,600	$7,000	$7,300	$7,500	$7,600

CAPITAL MARKET RISK ADVISORS

Gamma Sensitivities

$$\text{delta}\ (r_t - r_{t-1}) + \tfrac{1}{2}\,\text{gamma}_{\ i}\,(r_t - r_{t-1})^2 = \text{P \& L}$$

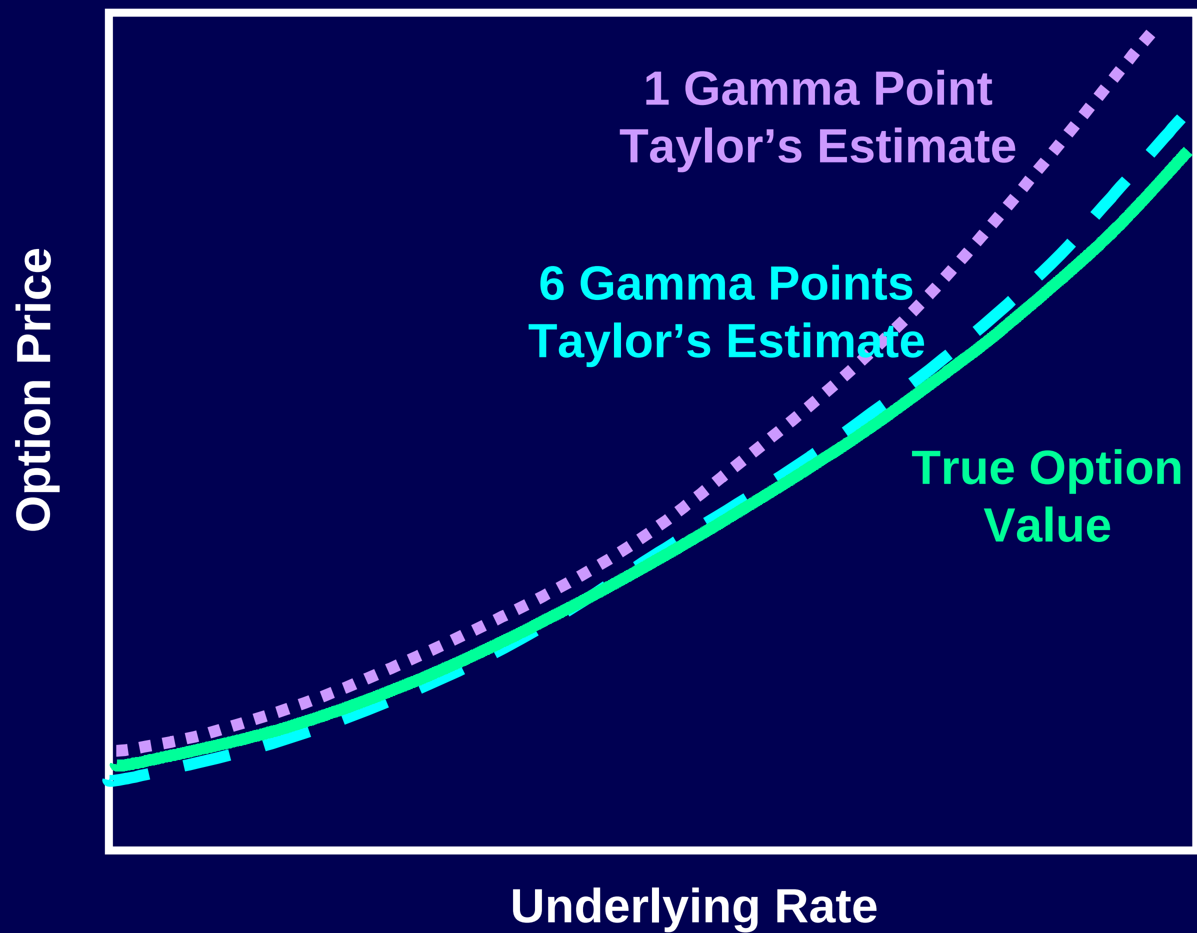
7,000 * -10bps + 1/2 * -400 / 10 * 10 ^{2} = -$72,000

7,000 * -25bps + 1/2 * -1,200 / 25 * 25 ^{2} = -$187,500

7,000 * -75bps + 1/2 * -3,000 / 75 * 75 ^{2} = -$637,500

CAPITAL MARKET RISK ADVISORS

Taylor's Estimate
Using Multiple Gamma Taylor's



Estimation Error
Multiple Gamma Taylor's

Stock Price	Black & Scholes	Taylor's Estimate	% Difference
85	.06	0	na
90	.36	0	na
95	1.40	1.43	0%
100	3.64	3.64	0%
105	7.13	7.19	1%
110	11.51	11.65	1%
115	16.30	16.45	1%
120	21.25	22.40	5%

CAPITAL MARKET RISK ADVISORS

Why Doesn't Everyone Use Multiple Gammas?

- Many front office systems cannot provide gamma sensitivities for multiple shifts in prices/rates
- Calculating gamma can be time consuming
- Data management may not be capable of storing multiple gamma sensitivities
- Still leaves some room for error (at extreme price changes)

CAPITAL MARKET RISK ADVISORS

Historic Simulation Sensitivity Approach

Advantages

- Fast since it doesn't revalue every position
- Works for linear risks and options risk
- Requires only portfolio level sensitivities

Disadvantages

- Does not revalue positions
- Can only estimate complex or discontinuous payoffs

CAPITAL MARKET RISK ADVISORS

Historic Simulation
Full Revaluation

The Historic Simulation Full Revaluation approach calculates P&L by revaluing the portfolio given historic in prices/yields.

Position Exposure

Time Series
Historical Price Changes

→ **Pricing Model Library** → **P&L Distribution of Portfolio** = **VAR**

Historic Simulation
Revaluation P&L

Time Series

Date	Price
Jan2	130
Jan3	131
Jan4	132
Jan5	130.5
.	.
.	.
.	.
Dec31	130

Pricing Models

Fixed Income
Options
MBS/CMO
Other

Daily P&L

Date	P&L
Jan2	-$1,200
Jan3	+2,581
Jan4	+2,687
Jan5	-3,547
.	.
.	.
.	.
Dec31	+5,415

CAPITAL MARKET · RISK · ADVISORS

Rank Order the P&L

Date	Rank	P&L	
Jan 13	1	+229,000	
Mar 4	2	+217,500	
Jun 30	3	+215,300	
Oct 20	4	+199,100	
…	…	…	
Jul 7	950	-125,000	◄ 95% VAR
…	…	…	
Mar 12	990	-180,000	◄ 99% VAR
…	…	…	
Apr 19	998	-221,000	
Apr 2	999	-239,000	
Dec 21	1,000	-308,400	

CAPITAL MARKET RISK ADVISORS

Historic Simulation
Full Revaluation

Advantages

- Produces accurate P&L results
- Can model very complex and discontinuous payoffs
- Works well for linear risks and options risk

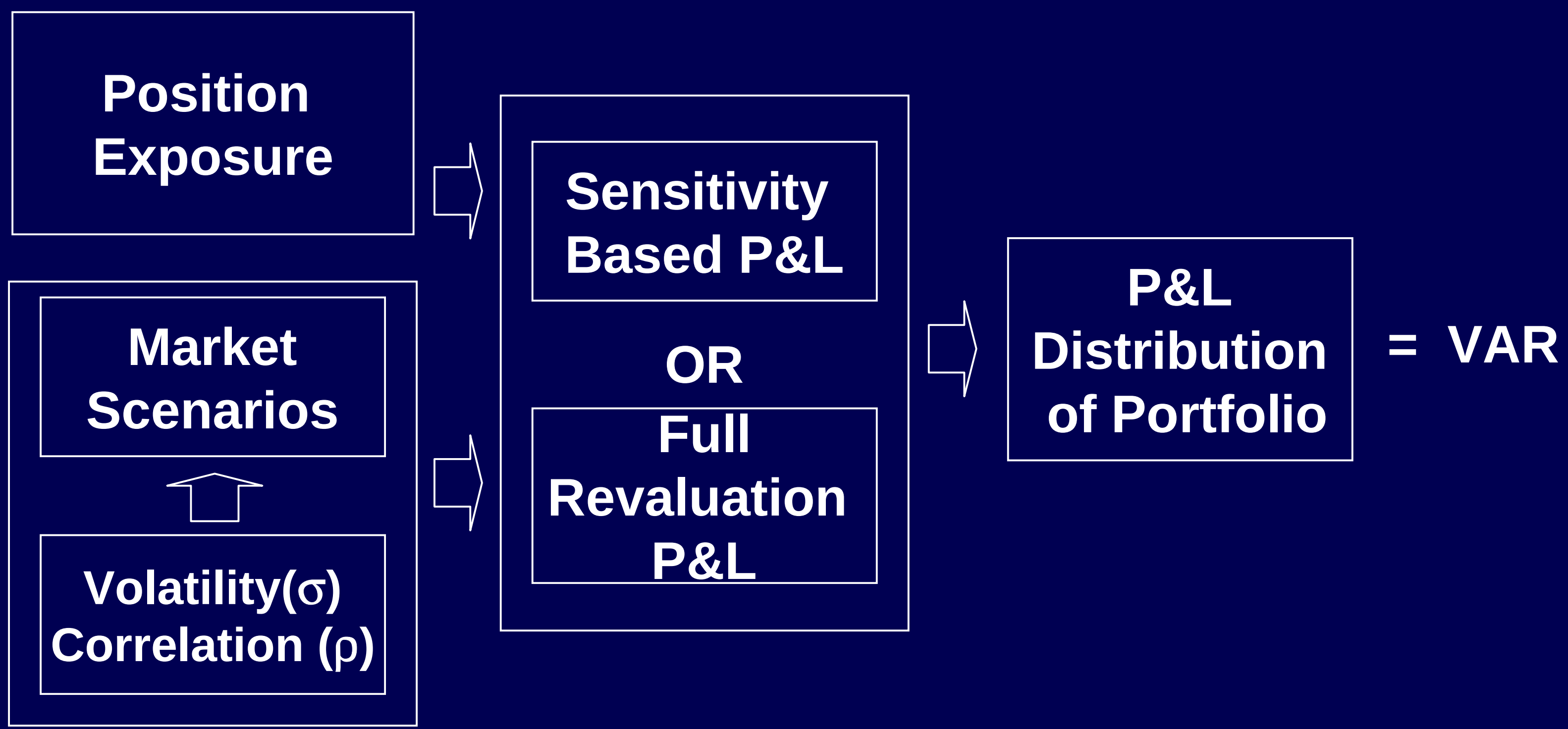
Disadvantages

- Slow and computationally intensive
- Requires maintenance of a pricing model library
- Requires trade level detail data inputs

CAPITAL MARKET RISK ADVISORS

Monte Carlo Simulation

Monte Carlo Simulation generates numerous random market scenarios using predetermined parameters for price volatility and correlation and calculates the P&L for each scenario.



Monte Carlo Simulation

Advantages

- Produces a distribution of P&L changes
- Allows for multiple periods with rehedging and maturation
- Provides greatest level of control over price volatility

Disadvantages

- Mathematically intensive (scenario generation)
- Parametric - requires distribution and correlation assumptions
- Less transparent

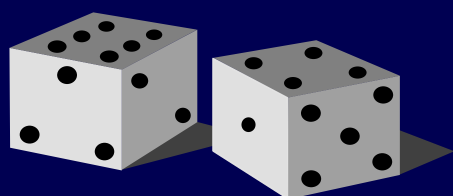
CAPITAL MARKET RISK ADVISORS

Generate Random Scenarios

Historic Volatility Estimates

Correlation Estimates

Random Number Generator



Scenario	Rates
1	6.25
2	6.34
3	6.54
4	6.43
.	.
.	.
.	.
10,000	7.01

Calculate the P&L Results for Each Scenario and Rank Order

Scenario	Date	Price	Price	Rate	Change		P&L
1	Jan2	100	99	6.25%	.12	→	-91,200
2	Jan3	101	97	6.35%	.10	→	-76,000
3	Jan4	102	99	6.40%	.05	→	-38,000
4	Jan5	101	98	6.15%	-.25	→	190,000
.	.	.	.	.	.		.
.	.	.	.	.	.		.
.	.	.	.	.	.		.
10,000	Dec31	100	94	6.20%	-.13	→	98,800

CAPITAL MARKET RISK ADVISORS

Count Down to Find the x% Confidence VAR

Scenario	Rank	P&L	
3,197	1	+229,000	
7,349	2	+217,500	
7,768	3	+215,300	
8,889	4	+199,100	
...	...	...	
8,256	950	-125,000	← 95% VAR
...	...	...	
7,596	990	-180,000	← 99% VAR
...	...	...	
1,991	998	-221,000	
8,467	999	-239,000	
5,469	1,000	-308,400	

CAPITAL MARKET ▪RISK▪ ADVISORS

Monte Carlo
Sensitivity Approach

Advantages

- Fast since it doesn't revalue every position
- Works for linear risks and options risk
- Requires only portfolio level sensitivities

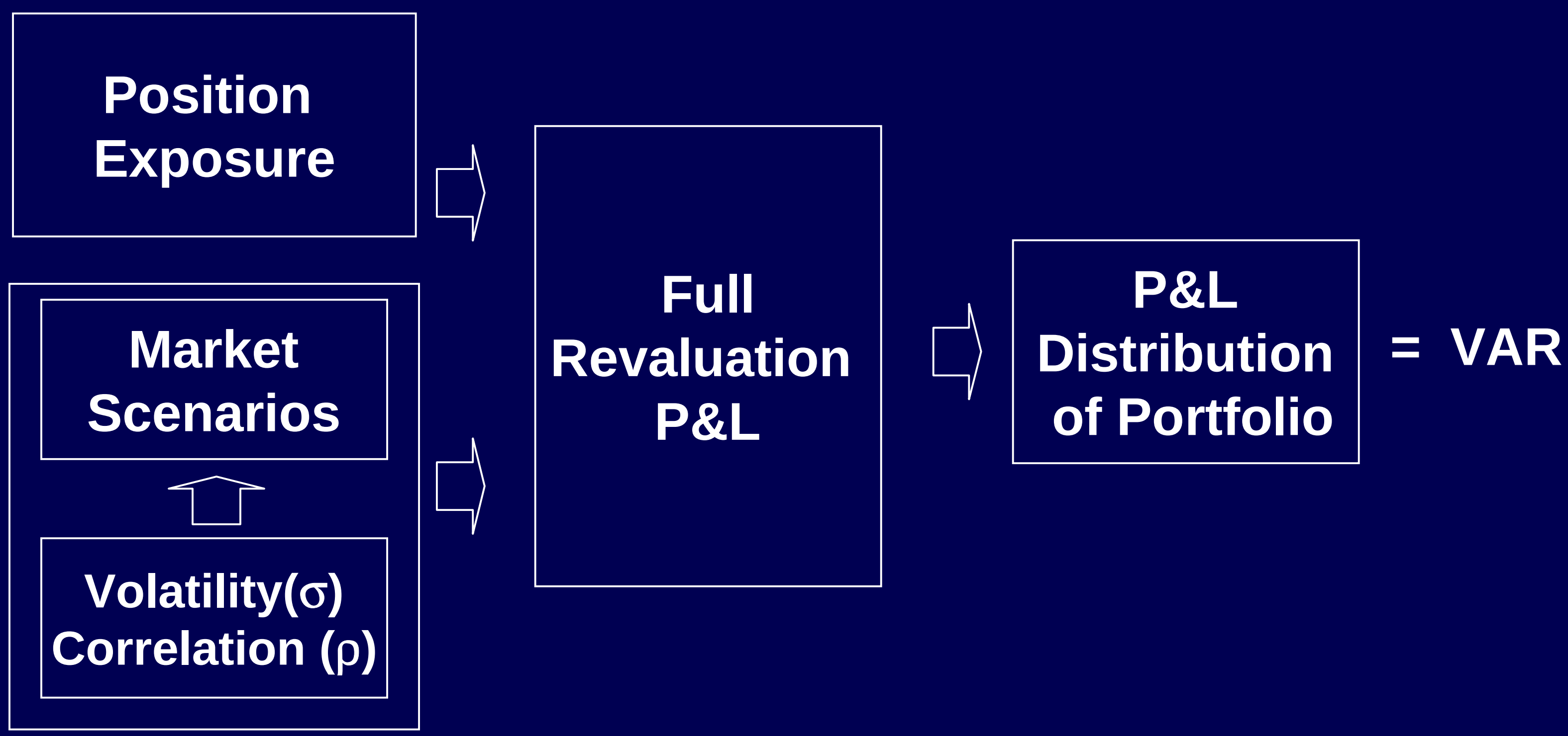
Disadvantages

- Does not revalue positions
- Can only estimate complex or discontinuous payoffs

CAPITAL MARKET RISK ADVISORS

Monte Carlo Full Revaluation

The Historic Simulation Full Revaluation approach calculates P&L by revaluing the portfolio given historic in prices/yields.



Monte Carlo Simulation Revaluation P&L

Scenario Prices

Date	Price
Jan2	130
Jan3	131
Jan4	132
Jan5	130.5
.	.
.	.
.	.
Dec31	130

→

Pricing Models

Fixed Income
Options
MBS/CMO
Other

→

Daily P&L

Date	P&L
Jan2	-$1,200
Jan3	+2,581
Jan4	+2,687
Jan5	-3,547
.	.
.	.
.	.
Dec31	+5,415

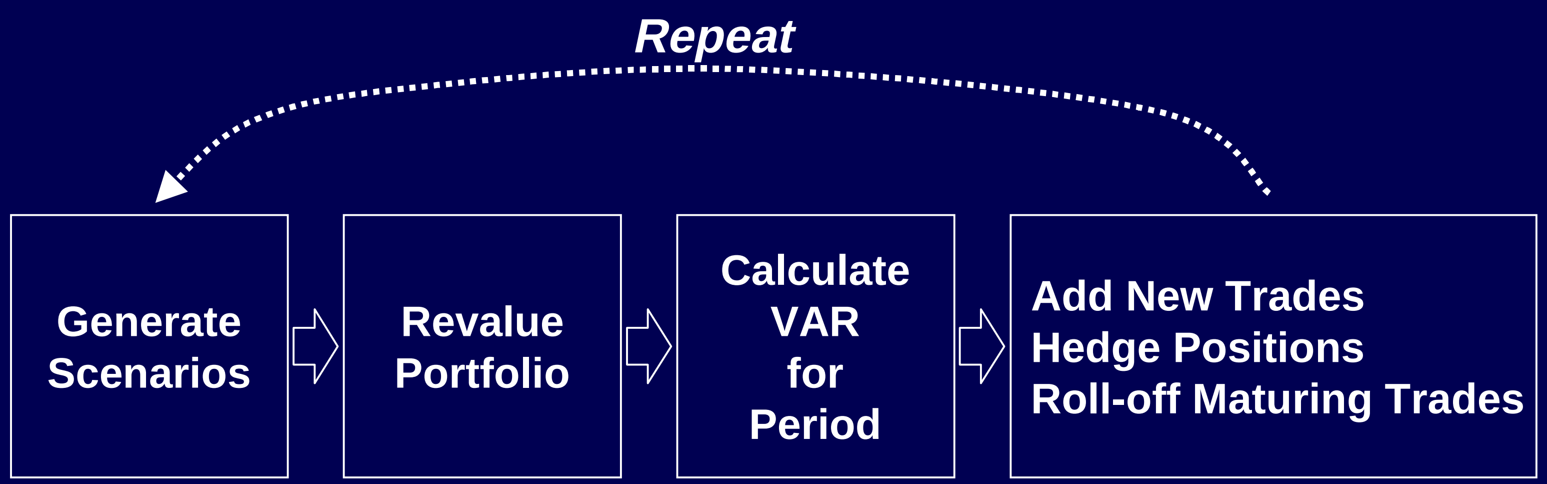
Rank Order the P&L

Date	Rank	P&L	
Jan 13	1	+229,000	
Mar 4	2	+217,500	
Jun 30	3	+215,300	
Oct 20	4	+199,100	
…	…	…	
Jul 7	950	-125,000	◄ 95% VAR
…	…	…	
Mar 12	990	-180,000	◄ 99% VAR
…	…	…	
Apr 19	998	-221,000	
Apr 2	999	-239,000	
Dec 21	1,000	-308,400	

CAPITAL MARKET RISK ADVISORS

Multiple Time Horizons

The Monte Carlo Simulation allows for multiple period VAR.



CAPITAL MARKET RISK ADVISORS

Monte Carlo
Full Revaluation

Advantages

- Produces accurate P&L results
- Can model very complex and discontinuous payoffs
- Works well for linear risks and options risk

Disadvantages

- Slow and computationally intensive
- Requires maintenance of a pricing model library
- Requires trade level detail data inputs

CAPITAL MARKET RISK ADVISORS

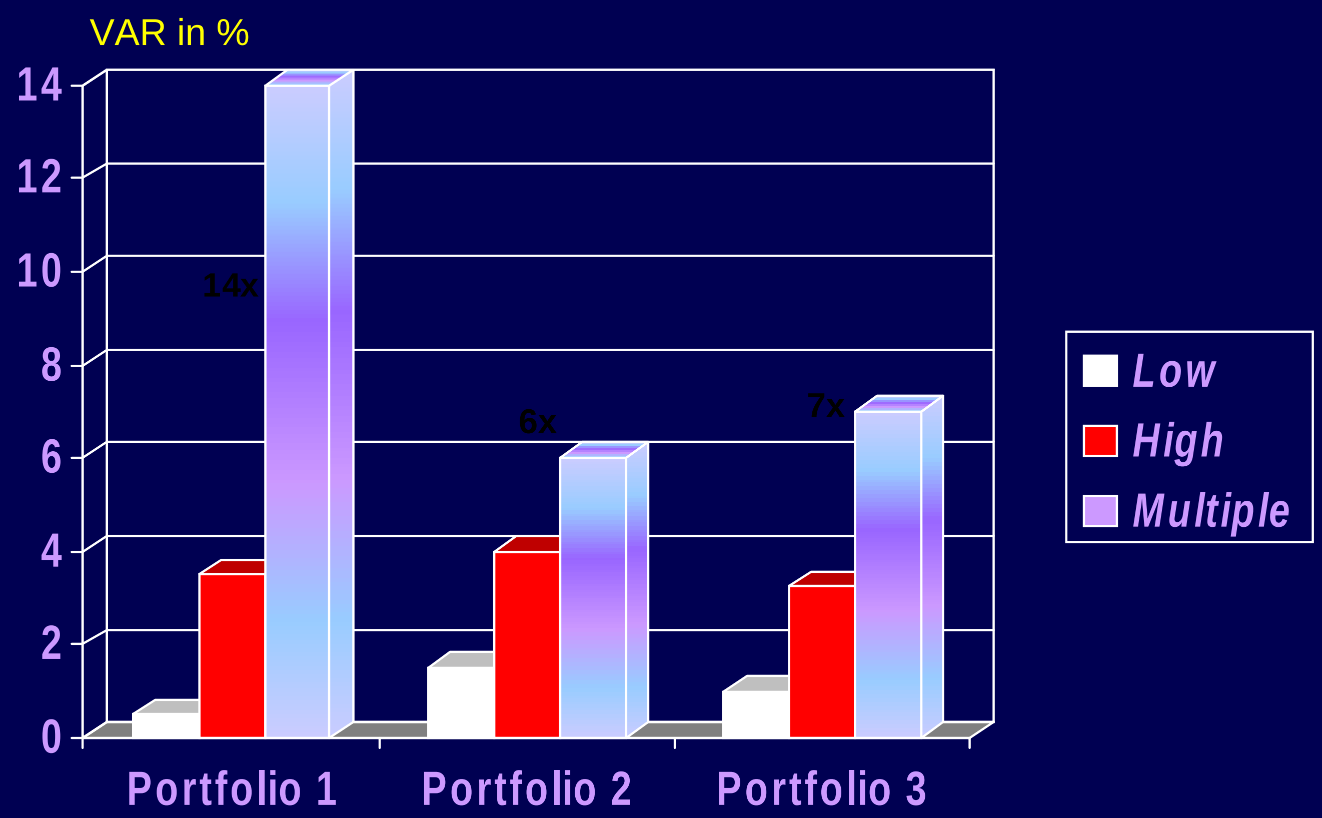
Three Types of VAR

Method	Advantages	Disadvantages
Variance/ Covariance	• Easy to understand • Least computationally intensive • Widely used in industry • Easiest to implement	• Does not fully capture non-linear risks • Assumes normally distributed returns and constant volatilities • Does not capture "Fat Tails"
Historic Simulation	• Easy to understand • Can capture non-linear risks • Actual distribution • Incorporates "Fat Tails"`	• Can be data intensive • Assumes past is a fair representation of the present
Monte Carlo Simulation	• Accommodates a variety of statistical models and assumptions • Can capture non-linear risks, • Can apply multiple time periods	• Does not capture "Fat Tails" • Computationally intensive • Less transparent/more difficult to understand

CAPITAL MARKET RISK ADVISORS

Highest & Lowest VARs

Using Eight Common Techniques



Source: CMRA Survey of Market Practice, 1995

CAPITAL MARKET RISK ADVISORS

Variance Covariance

Position Inputs

- Delta $\frac{d\underline{S}}{dR}$
- Gamma $\frac{d''\underline{S}}{dR''}$

Volatility Inputs

- σ of rates or prices
- ρ of rates or prices

Skewness Adjustment

Calculates the z-score adjustment (γ) factor due to the lack of symmetry of an option payoff

$$3\sum_{i=1}^{N}\sum_{j=1}^{N}\sum_{k=1}^{N} \text{delta}_i \text{delta}_j \text{gamma}_k \text{cov}_{i,j} \text{cov}_{j,k}$$
$$+\sum_{i=1}^{N}\sum_{j=1}^{N}\sum_{k=1}^{N} \text{gamma}_i \text{gamma}_j \text{gamma}_k \text{cov}_{i,j} \text{cov}_{j,k} \text{cov}_{i,k}$$

P&L Calculation

Calculates the P&L by multiplying the position (delta) times the change in price or rate for one standard deviation. Then adjusts for diversification benefits.

$$\sum_{i=1}^{N} \text{delta}_i^2 \sigma_i^2$$
$$+\sum_{\substack{i=1\\ i\neq j}}^{N}\sum_{j=1}^{N} \text{delta}_i \sigma_i \text{delta}_j \sigma_j \rho_{i,j}$$

Z-Score

Confidence	#σ's
84%	*x*
90%	*x*
95%	*x*
97%	*x*
99%	*x*

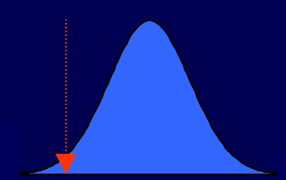
VAR Result

VAR Loss for one standard deviation

(Normal Distribution)

99% VAR Result

99% VAR = 84% VAR *γ 2.33



Historic Simulation Sensitivity

Position Inputs

- Delta — $\frac{dS}{dR}$
- Multiple Gammas — $\frac{d''S}{dR''}$

Time Series Inputs

Date	Price	Price	Rate
Jan2	100	99	6.25%
Jan3	101	97	6.35%
Jan4	102	99	6.40%
Jan5	101	98	6.15%
.	.	.	.
.	.	.	.
.	.	.	.
Dec31	100	94	6.20%

P&L Calculation

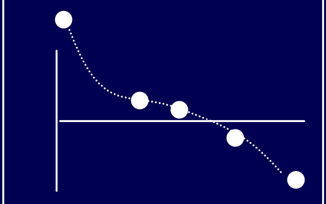
Calculates the P&L by multiplying the position (delta) times the actual change in price or rate for day in history. The second term multiplies the one half gamma position times the change in position squared. This is the addition/subtraction for the "option effect".

$$\sum_{t=1}^{T} \text{delta}\left(P_t - P_{t-1}\right) + \sum_{t=1}^{T} \tfrac{1}{2}\,\text{gamma}_{\text{p}}\left(P_t - P_{t-1}\right)^2$$

The gamma you apply depends on the size of the price/ rate shock

Gamma Curve

Spline Fit



Position Inputs

Gamma Vector

Shock	Gamma
+100	10
+25	2
0	1
-25	-2
-100	-5

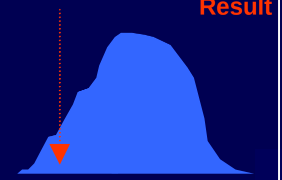
VAR Results

Sorted P&L

Date	P&L
Mar2	250
Jun15	130
Apr4	19
Apr19	-125
:	:
Nov30	-353

99% VAR Result

99% VAR = 99% Percentile Result



CAPITAL MARKET RISK ADVISORS

Historic Simulation Full Revaluation

Position Inputs

- Size
- Maturity
- Coupon Rate
- Volatility
- Strike
- Yield Curve
- Other

Time Series Inputs

Date	Rate	Rate	Rate
Jan2	7.2%	5.2%	6.2%
Jan3	7.3	5.2	6.2
Jan4	7.4	5.2	6.2
Jan5	7.2	5.2	6.2
.	.	.	.
.	.	.	.
.	.	.	.
Dec31	8.1%	5.9%	6.20%

P&L Calculation

Calculates P&L by repricing each position using the prices/rates that we actually observed for a day in history. If there are 250 days, each position must be revlaued 250 times.

Pricing Model Library

- Options
- Fixed Income
- MBS/CMO
- Other

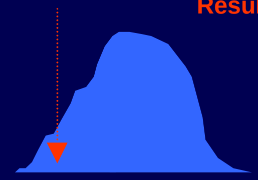
VAR Results

Sorted P&L

Scenario	P&L
6,795	250
1,498	130
948	19
239	-125
:	:
5,394	-353

99% VAR Result

99% VAR = 99% Percentile Result



Monte Carlo Simulation Sensitivity

Position Inputs

- Delta $\frac{dS}{dR}$
- Multiple Gammas $\frac{d''S}{dR''}$

Volatility Inputs

- σ of rates or prices
- ρ of rates or prices

Scenario Generator

Scenario	Price	Price	Rate
1	100	99	6.25%
2	101	97	6.23%
3	102	99	6.65%
4	101	98	6.15%
.	.	.	.
.	.	.	.
.	.	.	.
9,998	100	94	7.25%
9,999	100	94	7.25%
10,000	100	94	7.25%

P&L Calculation

Calculates the P&L by multiplying the position (delta) times the actual change in price or rate for day in history. The second term multiplies the one half gamma position times the change in position squared. This is the addition/subtraction for the "option effect".

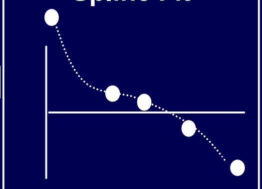
$$\sum_{t=1}^{T} \text{delta}(P_t - P_{t-1}) +$$

$$\sum_{t=1}^{T} \tfrac{1}{2}\,\text{gamma}_p (P_t - P_{t-1})^2$$

The gamma you apply depends on the size of the price/ rate shock

Gamma Curve

Spline Fit



Position Inputs

Gamma Vector

Shock	Gamma
+100	10
+25	2
0	1
-25	-2
-100	-5

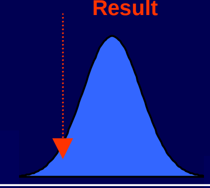
VAR Results

Sorted P&L

Date	P&L
Mar2	250
Jun15	130
Apr4	19
Apr19	-125
:	:
Nov30	-353

99% VAR Result

99% VAR = 99% Percentile Result



Monte Carlo Simulation Full Revaluation

Position Inputs

- Size
- Maturity
- Coupon Rate
- Prepayment speed
- Today's Price
- Today's Rates

Volatility Inputs

- σ of rates or prices
- ρ of rates or prices

Scenario Generator

Scenario	Price	Price	Rate
1	100	99	6.25%
2	101	97	6.23%
3	102	99	6.65%
4	101	98	6.15%
.	.	.	.
.	.	.	.
.	.	.	.
9,998	100	94	7.25%
9,999	100	94	7.25%
10,000	100	94	7.25%

P&L Calculation

Calculates P&L by repricing each position using a scenario that was generated based on historic estimates of volatility and correlation. If there are 10,000 scenarios, each position must be revlaued 10,000 times.

Pricing Model Library

- Options
- Fixed Income
- MBS/CMO
- Other

VAR Results

Sorted P&L

Scenario	P&L
6,795	250
1,498	130
948	19
239	-125
:	:
5,394	-353

99% VAR Result

99% VAR = 99% Percentile Result