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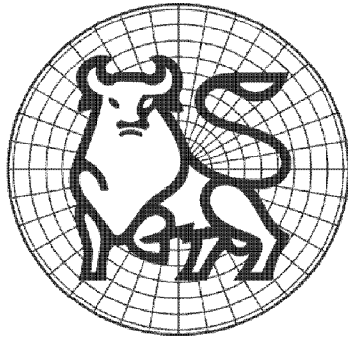# Merrill Lynch Presentation to the Risk Oversight Committee, Market Risk Management Update

Bank of America Corporation/ Bank of America Merrill Lynch

## Recommended Citation

# Presentation to the Risk Oversight Committee

# Market Risk Management Update

September 26, 2007

*Merrill Lynch & Co.*
*Market Risk Management*

# MRM Presentation to the Risk Oversight Committee

*VaR Backtesting*
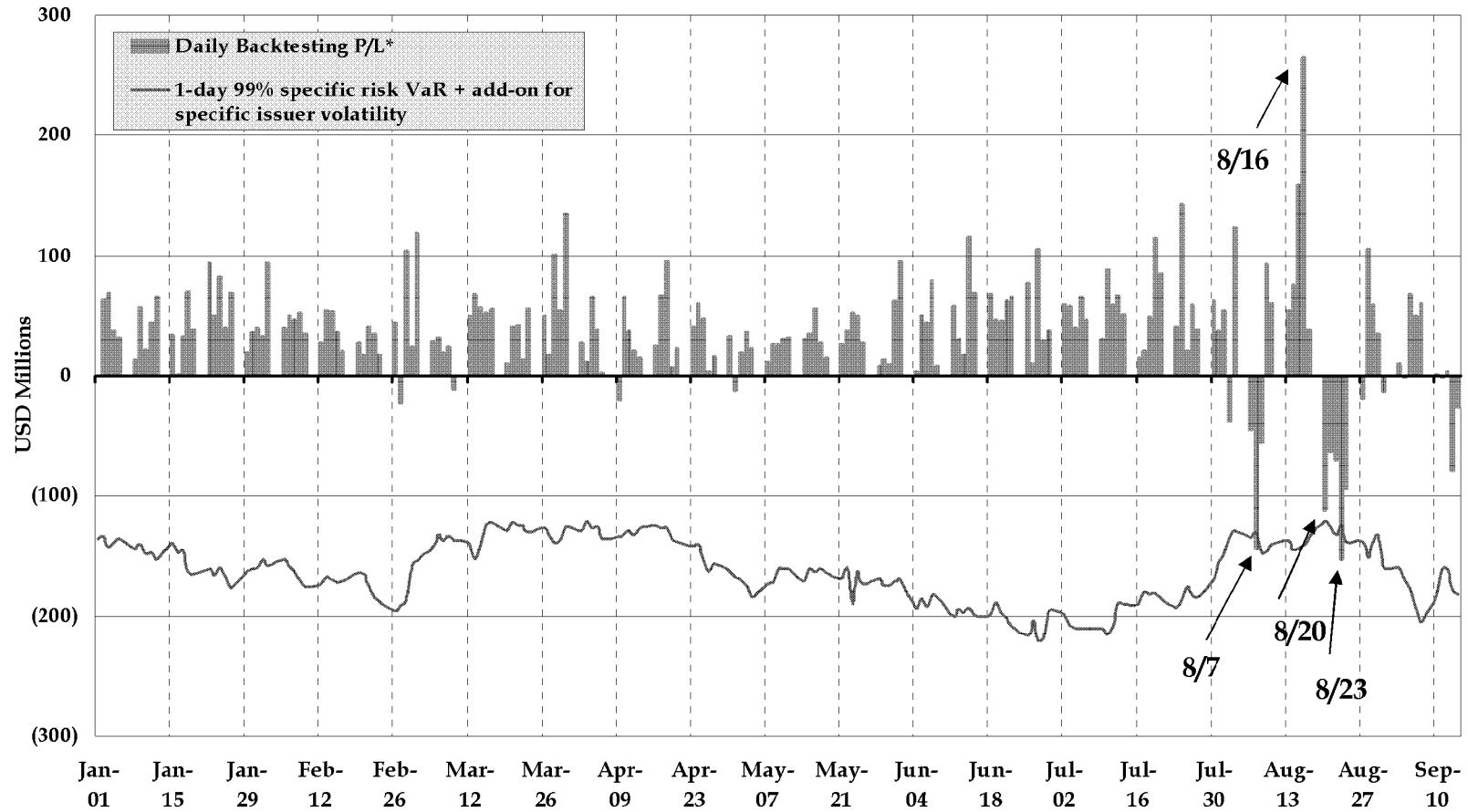


*Daily Backtesting P/L is intended to reflect profits or losses driven by market price changes on the day. The base P/L is Greensheets Principal Transactions, which excludes interest, dividends, fees and commissions. In some cases, Daily Backtesting P/L is also adjusted to eliminate material non-market driven accounting adjustments, new deal P/L, and in some cases intraday trading. The backtesting P&L does not include RPI and CDO Super Senior re-marking P&L due to the frequency of MTM.*

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# ML & Co. VaR Backtesting

*VaR Backtesting (Cont'd)*

## Highlight of P/L Movements

*($Millions)*

| P&L Date | Daily Gain / (Loss) | Key MPUs | P&L Contribution | Comment |
|---|---|---|---|---|
| Aug-07 | (144) | Equity SRG | (53) | Proprietary trading losses in Statistical Arbitrage business |
| | | GSFI | (39) | Losses on macro hedge due to tightening swap spreads and an equity market rally |
| | | Credit Trading | (19) | Losses driven by CDX spread P/L and bond re-marks |
| | | All Others | (33) | Small losses in various businesses with $12mm from Principal Credit Group Americas |
| Aug-16 | 265 | Currencies | 111 | Gains driven by long volatility positions in JPY, CHF, NZD and MXN as well as from short positions in TRL and NZD and long positions in JPY. |
| | | Credit Trading | 111 | Gains due to macro hedges in super-senior book, implemented by buying protection on monolines and through ABX index trades |
| | | Global Rates | 41 | Gains from long USD interest rate positions and long EUR and USD interest rate vega |
| Aug-20 | (112) | Currencies | (71) | Losses driven by lower volatility in JPY, AUD, NZD and TRY |
| | | Credit Trading | (17) | Losses driven primarily by US proprietary trading |
| | | All Others | (24) | ~$13mm from U.S. and Japan GELP |
| Aug-23 | (152) | Credit Trading | (51) | Losses in the super-senior book on ABX index hedges and long protection on monolines |
| | | Currencies | (48) | Losses in options trading due to lower JPY, AUD and NZD volatilities |
| | | GSFI | (35) | Losses due to adverse market movements causing losses in ABX positions |
| | | Global Rates | (20) | Drop in interest rate volatilities combined with a re-mark of FX volatilities in the Long Term Complex FX Option business |

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# ML & Co. VaR Backtesting

*VaR Backtesting (Cont'd)*

## Impact of Recent Volatility

- **Significantly higher volatility than the four year history (see below)**

| | Volatility | | |
|---|---|---|---|
| | Prior Period* | After 7/10/2007 | % Increase |
| S&P 500 | 11% | 22% | 100% |
| CDX High Yield 5yr | 4% | 13% | 225% |
| Treasury Rate 5yr | 89 bp | 117 bp | 31% |
| Dollar / Yen 1y Implied Volatility | 19% | 84% | 342% |

\* *Based on current MRM system definition*

- **Liquidity driven market event (such as Stat. Arb.) is an evident challenge**

- **Macro hedge positions are significantly reduced from the peak**

- **The challenges are industry-wide; feedback from supervisors indicates that ML experience is not extraordinary compared to peers**
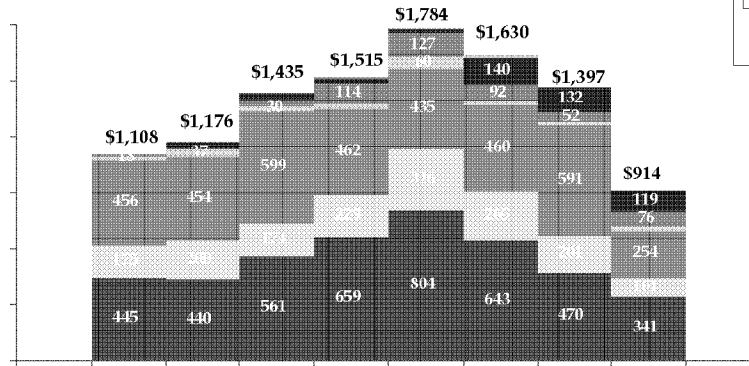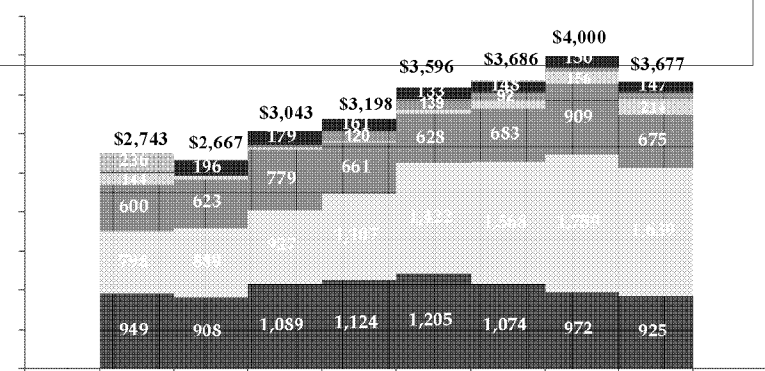
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# ML&Co. Credit Event Scenarios Trend

*Once in 10 Years Spread Widening Scenario\**

## By Collateral Type: *Trading*



## By Collateral Type: *Trading+Non-Trading*



■ Residential Real Estate　▧ Commercial Real Estate　▨ Corporate & Commercial Finance　▧ Consumer Credit　▨ Sovereigns　■ CDO　▨ Other

*\*2005 data represents monthly averages; quarterly data represents weekly averages; Credit SES does not include correlation risk which has a separate stress limit of $250mm*

## Residential Real Estate Exposure Summary

| | SES ($mm) | | | | MV ($bn) | | | |
|---|---|---|---|---|---|---|---|---|
| | | vs. 2Q07 | vs. 06 Avg. | | | vs. 2Q07 | vs. 06 Avg. | |
| | 9/14 | $ | % | $ | % | 9/14 | $ | % | $ | % |
| Trading+Non-Trading | 925 | (46) | -5% | (108) | -10% | 50.2 | (16.9) | -25% | (21.7) | -30% |
| Americas | 816 | (80) | -9% | (175) | -18% | 42.1 | (8.7) | -17% | (18.7) | -31% |
| Prime | 346 | (4) | -1% | (32) | -8% | 18.9 | (10.9) | -37% | (10.1) | -35% |
| Non-Prime | 470 | (76) | -14% | (143) | -23% | 23.2 | 2.2 | 10% | (8.6) | -27% |
| MLEMEA | 76 | 17 | 28% | 33 | 78% | 7.0 | (8.3) | -54% | (3.6) | -34% |
| PACRIM | 33 | 17 | 113% | 33 | NM | 1.1 | 0.1 | 13% | 0.7 | 182% |

| | | vs. 2Q07 | vs. 06 Avg. | | | vs. 2Q07 | vs. 06 Avg. | |
|---|---|---|---|---|---|---|---|---|
| | 9/14 | $ | % | $ | % | 9/14 | $ | % | $ | % |
| Trading | 341 | (130) | -28% | (276) | -45% | 8.9 | (15.5) | -64% | (23.1) | -72% |
| Americas | 323 | (130) | -29% | (270) | -45% | 8.8 | (6.2) | -41% | (16.5) | -65% |
| Prime | 20 | (40) | -67% | (59) | -75% | 1.8 | (5.8) | -77% | (4.7) | -73% |
| Non-Prime | 303 | (91) | -23% | (210) | -41% | 7.0 | (0.4) | -5% | (11.7) | -63% |
| MLEMEA | 18 | 1 | 4% | (6) | -25% | 0.1 | (9.3) | -99% | (6.6) | -99% |
| PACRIM | 0 | 0 | NM | 0 | NM | 0.0 | 0.0 | NM | 0.0 | NM |

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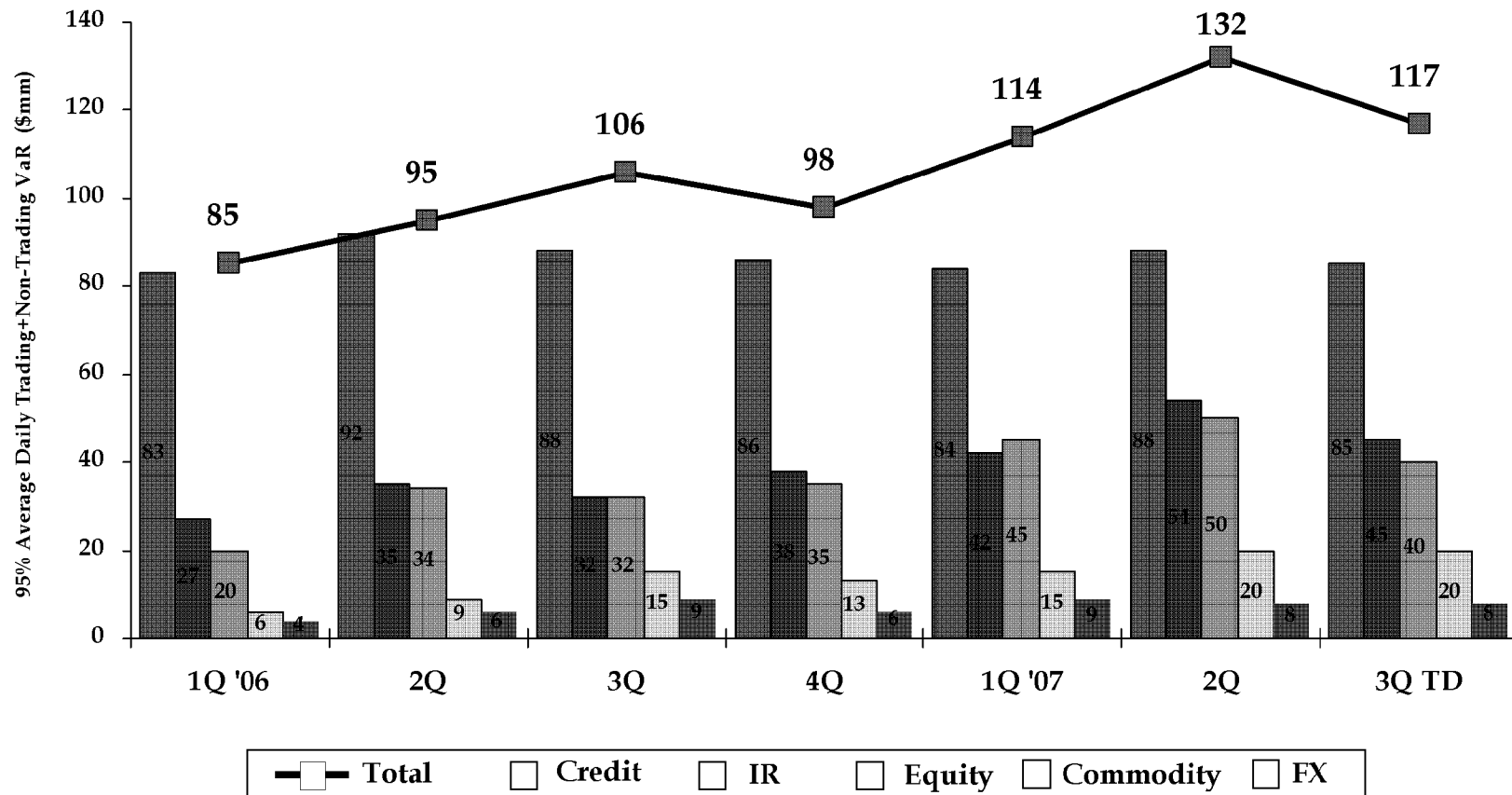
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# VaR Growth by Asset Class
*2006 – 2007 TD*

## Quarterly Average Trading+Non-Trading VaR

- Credit portfolio risk increase has been contained as discussed at Risk Oversight Committee. We always had significant concentration in credit spread risk.

# ABS CDOs Risk Update

- **Issues**
  - Until February 2007, we were able to buy protection to make the risk very far out-of-the-money, hence DV01 was modest. The real challenge started when monolines stopped selling protection on mezzanines.
  - After the start of Subprime crisis, the first order focus was to reduce the junior tranche exposure.
  - Underlying collateral analysis is extremely challenging due to the complexity of ABS asset combination
  - The very low usage in Stress Event Scenario was due to the combination of the far out-of-the-money risk nature and the very low historical volatility of the Super AAA time series mapping.
  - Desk-level DV01 limits were set at a modest level for AAA risks.

- **Current Status**
  - $5 billion reduction on 50%-100% High Grade risk, possibly more
  - Business / Risk / Finance working on new valuation methodology based on fundamental analysis
  - Infrastructure challenges in Credit Derivatives

- **Exposure Update**

| ($Millions) | Retained Super Senior | | | | Spread DV01 | |
|---|---|---|---|---|---|---|
| | High Grade | Mezzanines | CDO2 | Total | $ | Limit |
| AUG-06 | 5,580 | 1,610 | - | 7,190 | 2.35 | Stress $75mm |
| SEP-06 | 7,210 | 2,075 | - | 9,285 | 2.76 | 3.00 |
| JAN-07 | 12,810 | 4,524 | - | 17,334 | 2.42 | 5.70 |
| FEB | 15,175 | 4,737 | 370 | 20,282 | 4.78 | 5.70 |
| MAR | 18,620 | 6,109 | 700 | 25,429 | 6.84 | 7.40 |
| APR | 23,220 | 6,192 | 1,340 | 30,752 | 6.01 | 7.40 |
| MAY | 22,310 | 6,117 | 440 | 28,867 | 5.98 | 7.40 |
| JUN | 22,310 | 6,423 | 1,620 | 30,353 | 6.79 | 7.40 |
| JUL | 24,120 | 6,438 | 1,505 | 32,158 | 6.60 | 7.40 |
| AUG | 18,286 | 6,228 | 1,201 | 25,715 | 5.40 | 7.40 |
| SEP | 18,158 | 6,173 | 1,201 | 25,532 | 5.30 | 7.40 |

# ABS CDOs Risk Update *(Cont'd)*

## Follow-up for the Future

- **Revised methodology for Subprime stress scenarios based on fundamental analysis (see page on Real Estate Price Shock Scenario)**

- **Review of other large B/S or far out-of-the-money risk concentration with senior management**

- **Examples:**

  - GSFI lending ($40bn+)

  - Investment Portfolio ($20bn+ and MLBUSA ABCP)

  - Commercial Real Estate Lending ($25bn+ including ML Capital)

  - Treasury Liquidity Portfolio ($20bn+ in CMO Floaters)

  - Convertibility risk (Korea, India, Brazil, Turkey, etc.)

  - GELP non-recourse financing and Hedge Fund derivatives

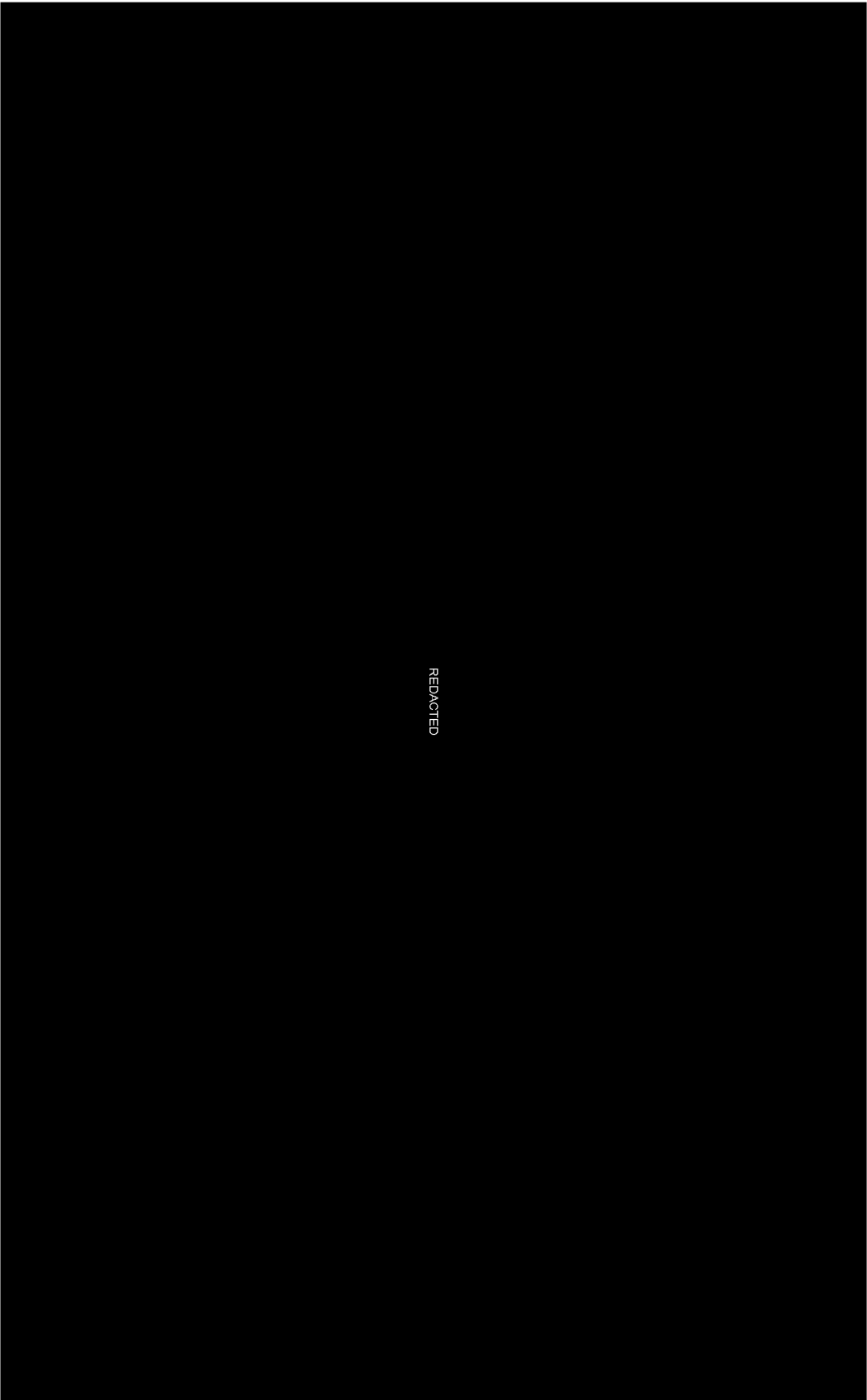  - OTM Derivative risk in GELP and CFXO (shorter Vega as markets sell off)

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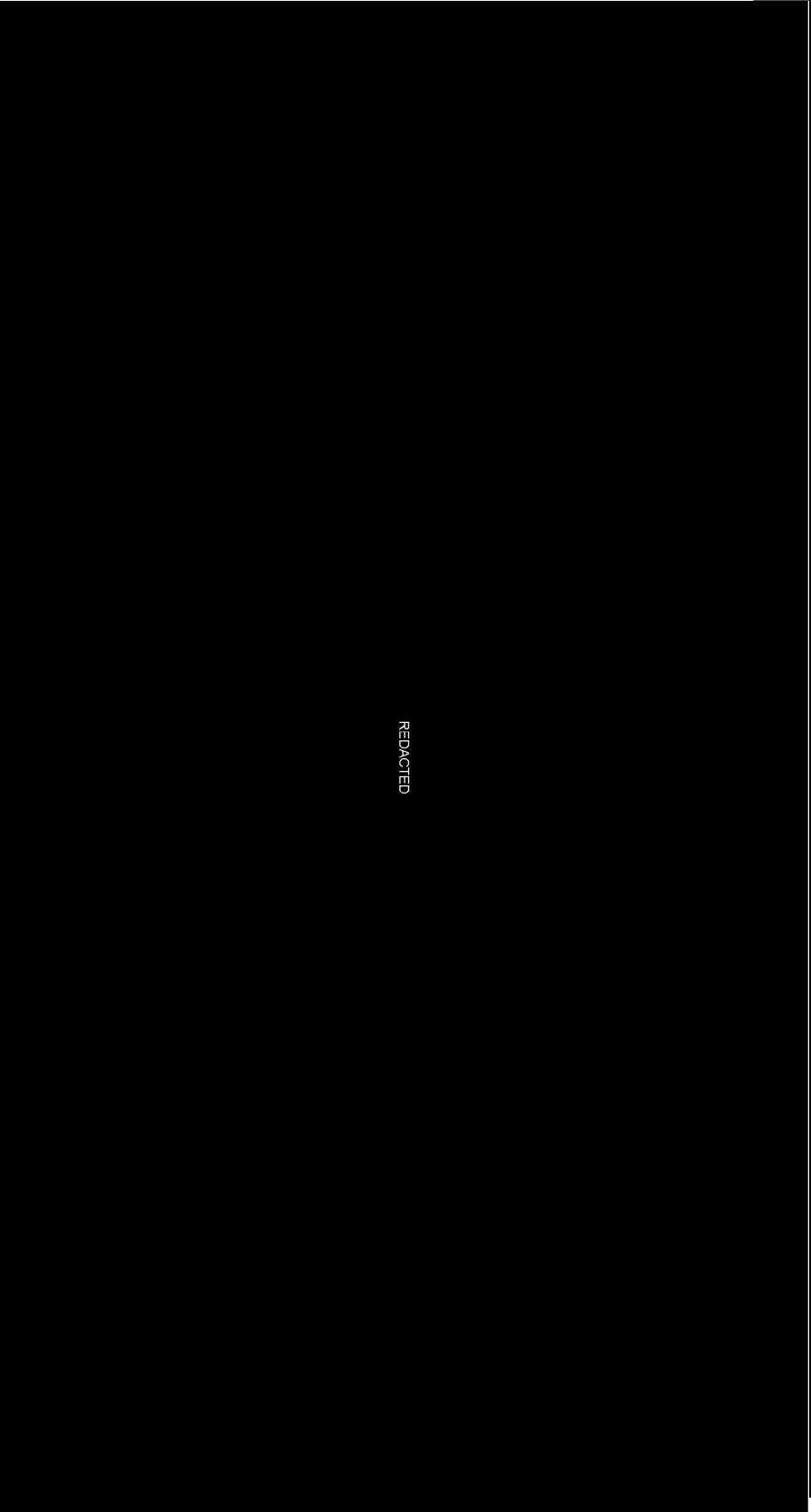
# VaR Modeling Update

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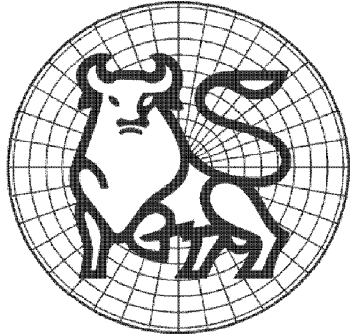
*Global Market Risk Management - Appendix*

*Risk Profile Update*

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## MRM Presentation to the Risk Oversight Committee
*ABX HE 07-1*

### 2007-to-Date Weekly Price Trend by Rating

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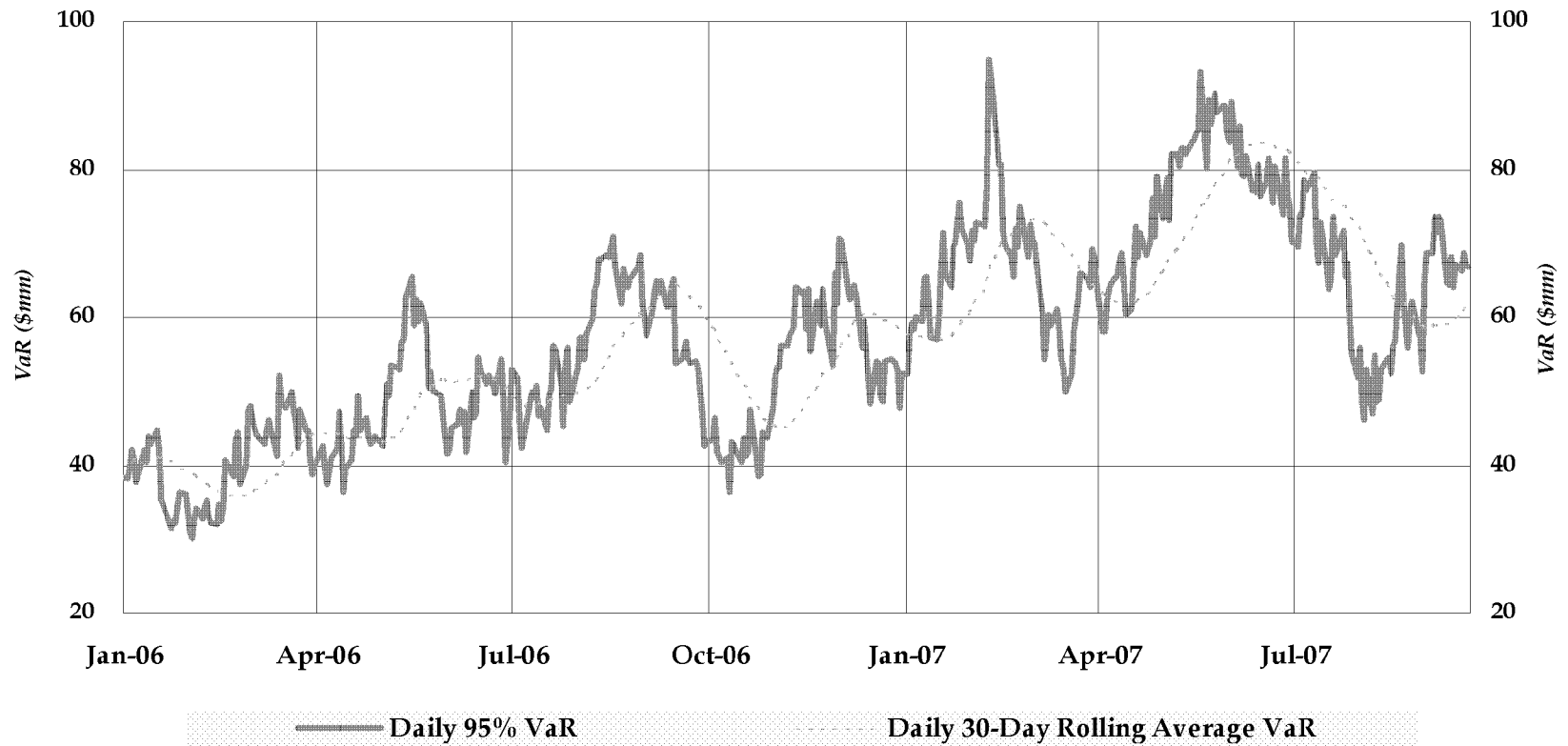*Market Risk Management*
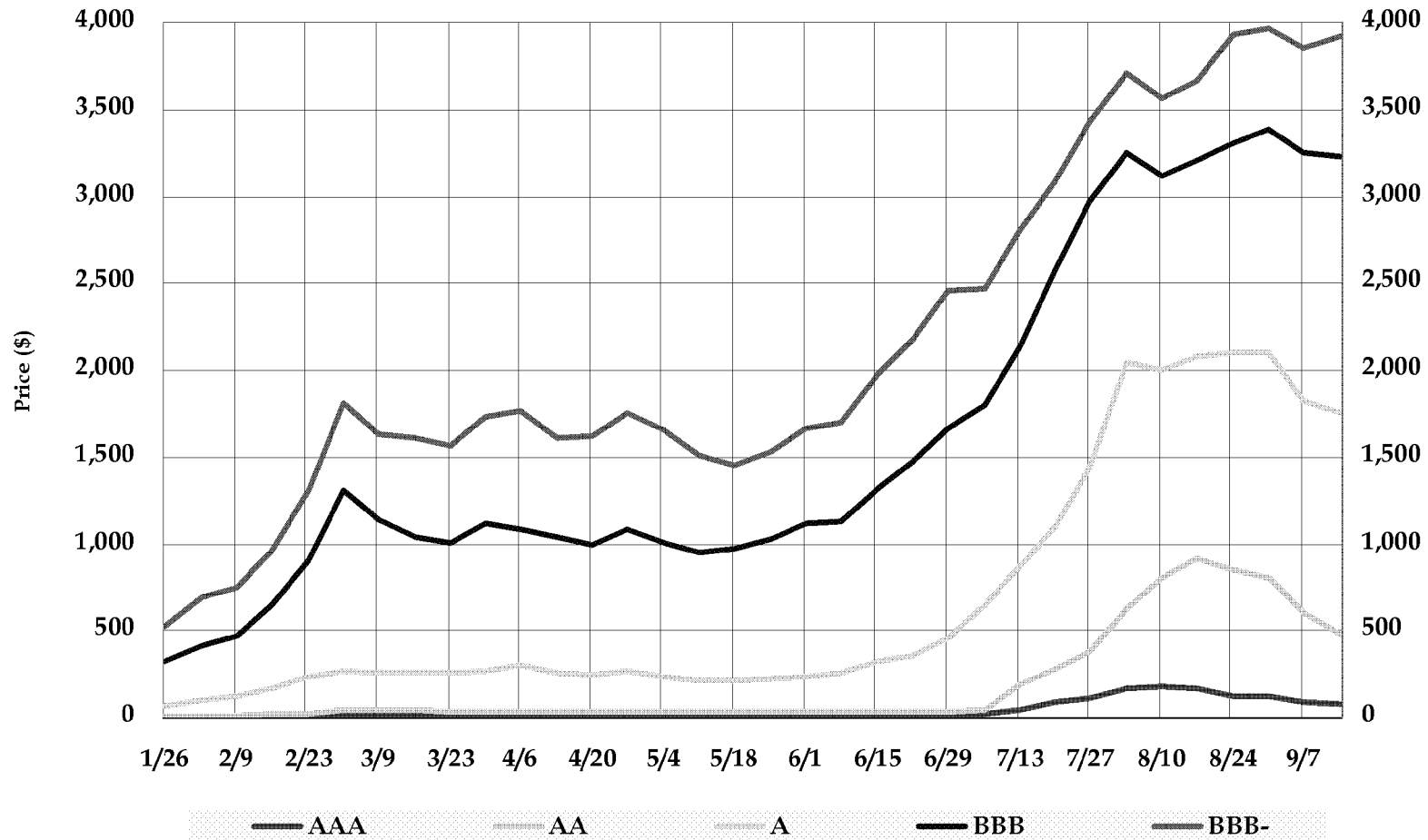
# ML&Co. Daily 95% Trading VaR
*January 2006 – September 20, 2007*

| | Q4 '05 | Q1 '06 | Q2 '06 | Q3 '06 | Q4 '06 | Q1 '07 | Q2 '07 | 9/27/07 |
|---|---|---|---|---|---|---|---|---|
| VaR | $38mm | 40mm | 54mm | 43mm | 52mm | 65mm | 70mm | 67mm |



Daily 95% VaR          Daily 30-Day Rolling Average VaR

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# ML&Co. Daily 95% Trading VaR Trend by Risk Factor
*January 2006 – September 20, 2007*
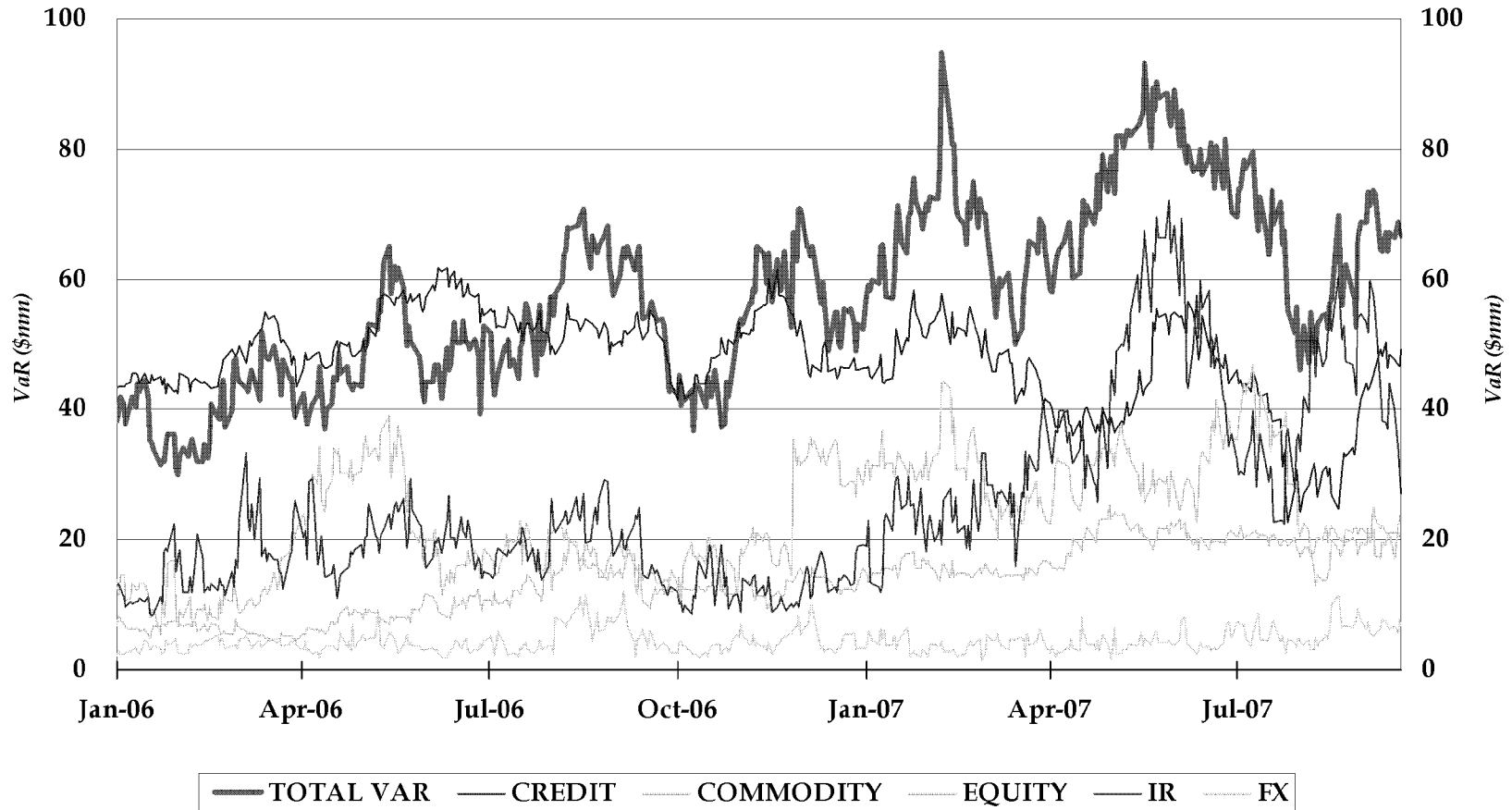


Legend: TOTAL VAR — CREDIT — COMMODITY — EQUITY — IR — FX

Note: Credit Risk = Spread Volatility + Credit Product Spread + Credit Product Market Value

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## ML&Co. Equity Specific Risk
*November 2006 – September 20, 2007*
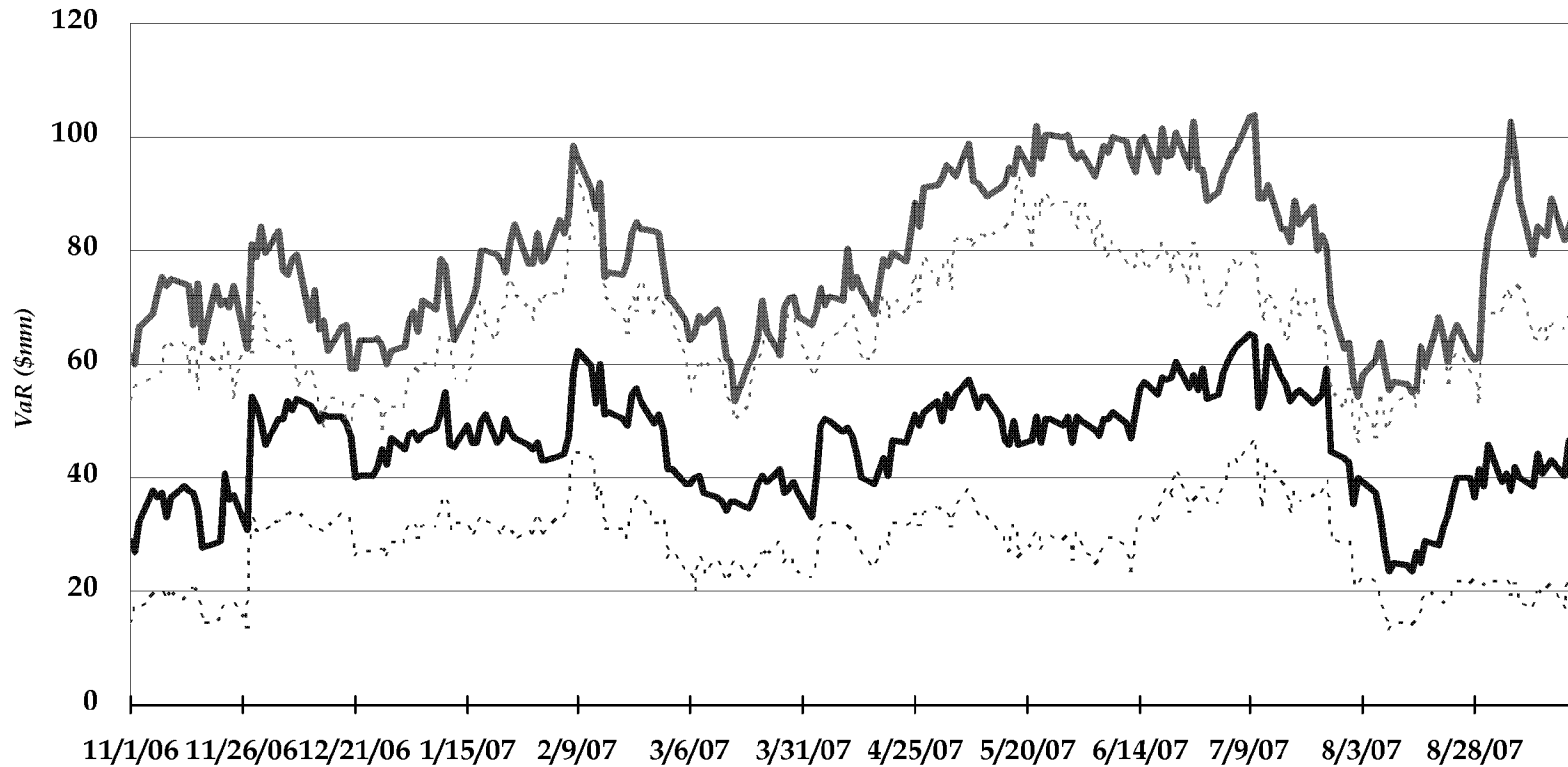


| | Total VaR w/ Eqty Sp. Risk | Equity VaR w/ Eqty Sp. Risk |
| --- | --- | --- |
| | Total VaR w/ Gen. Mkt Risk | Equity VaR w/ Gen. Mkt Risk |

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# ML&Co. Daily 95% Stand-alone VaR:  Trading+Non-Trading
*January 2006 – September 20, 2007*

## By Risk Factor
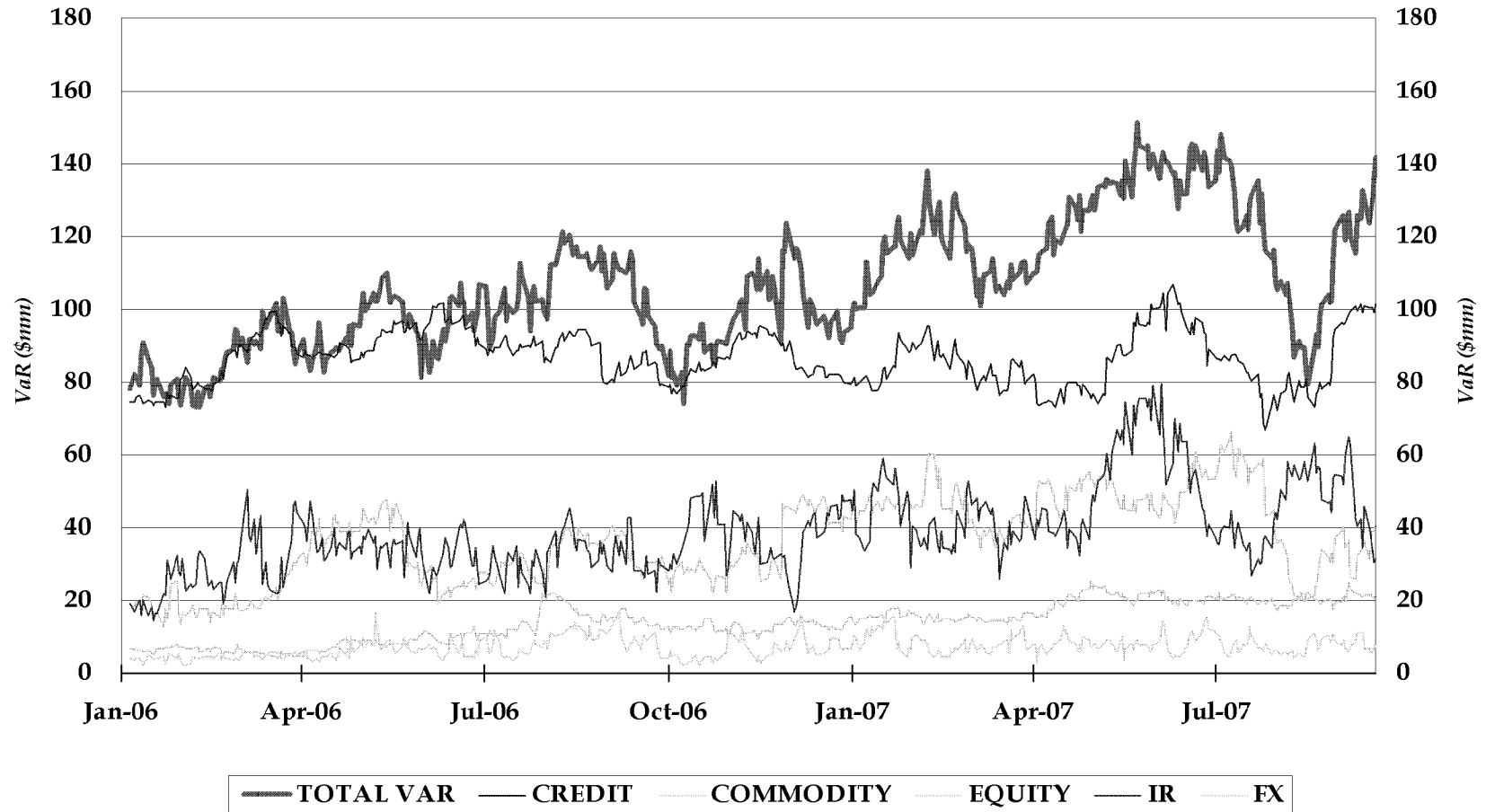


Note:  Credit Risk = Spread Volatility + Credit Product Spread + Credit Product Market Value

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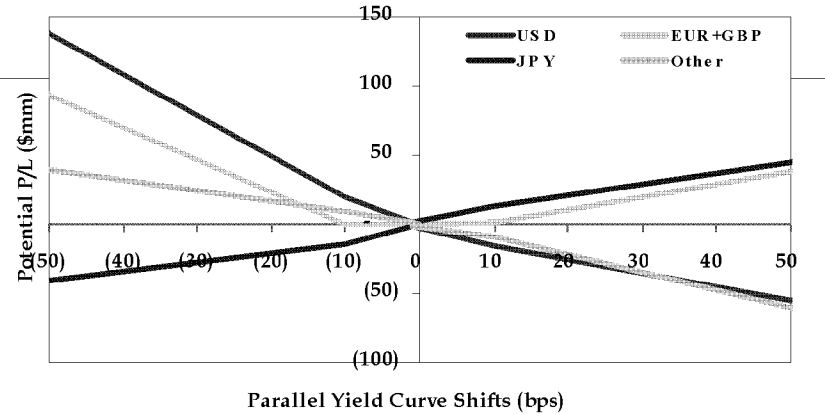
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# ML&Co. Interest Risk

*Trading*

## ML&Co. P&L Profile

Potential P/L ($mm)

| Legend |
|---|
| Q4 '06 |
| Q2 '07 |
| Q1 '07 |
| 9/20/07 |

1,400
1,200
1,000
800
600
400
200

(100)  (75)  (50)  (25) (200) 0  25  50  75  100

Parallel Yield Curve Shifts (bps)
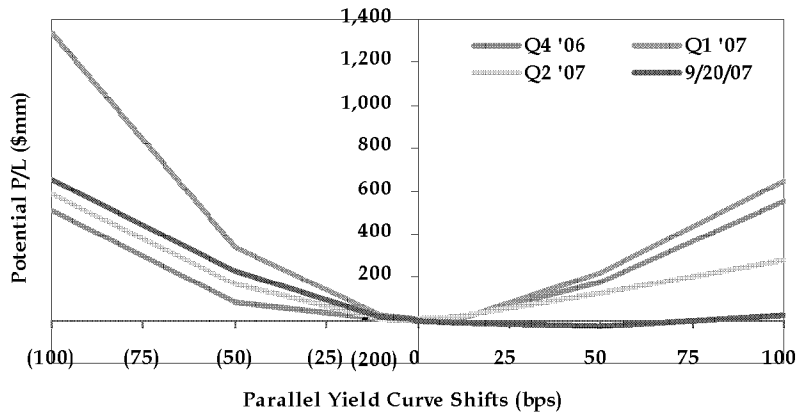
## P&L Profile by Major Currency: *9/20/07*

Potential P/L ($mm)

| Legend |
|---|
| USD |
| JPY |
| EUR+GBP |
| Other |

150
100
50
(50)
(100)

(50)  (40)  (30)  (20)  (10)  0  10  20  30  40  50

Parallel Yield Curve Shifts (bps)

## P&L Trend: *January 2006 – September 20, 2007*                    *($000s)*

Loss for +10bps shift   Long

Loss for -10bps shift   Short

(50,000)
(40,000)
(30,000)
(20,000)
(10,000)
0
(10,000)
(20,000)
(30,000)
(40,000)
(50,000)

Jan-06  Feb-06  Mar-06  Apr-06  May-06  Jun-06  Jul-06  Aug-06  Sep-06  Oct-06  Nov-06  Dec-06  Jan-07  Feb-07  Mar-07  Apr-07  May-07  Jun-07  Jul-07  Aug-07  Sep-07

USD   JPY   EUR+GBP   OTHER

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# ML&Co. Equity Risk

*Trading*

## ML&Co. P&L Profile



Legend: Q4 '06, Q1 '07, Q2 '07, 9/20/07

Y-axis: Potential P/L ($mm)
X-axis: Shift(%)

## P&L Profile: *9/20/07*



Legend: AMR, EMEA, APR, Japan

Y-axis: Potential P/L ($mm)
X-axis: Shifts (%)

## P&L Trend: *January 2006 – September 20, 2007*



Y-axis (left and right): Potential P/L for -5% Shift ($Millions)

Legend: U.S. & Canada, EMEA, APR, Japan

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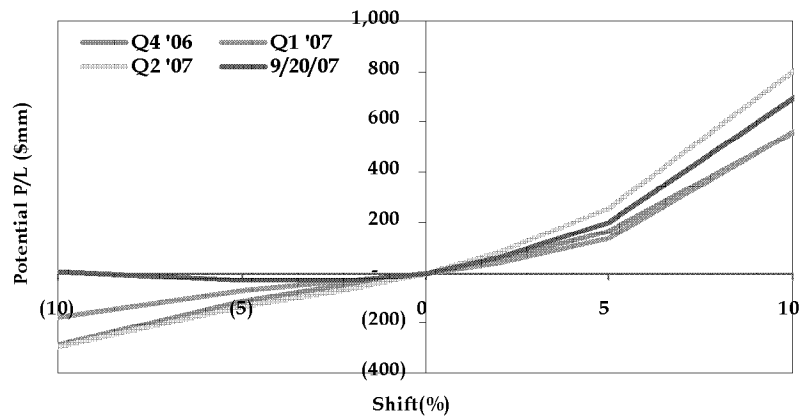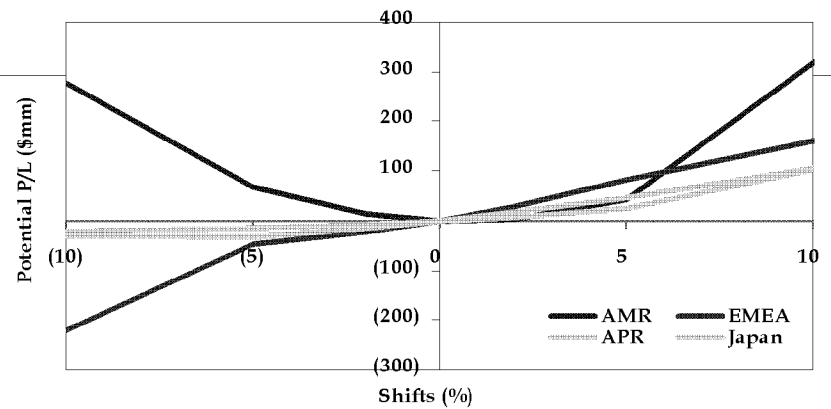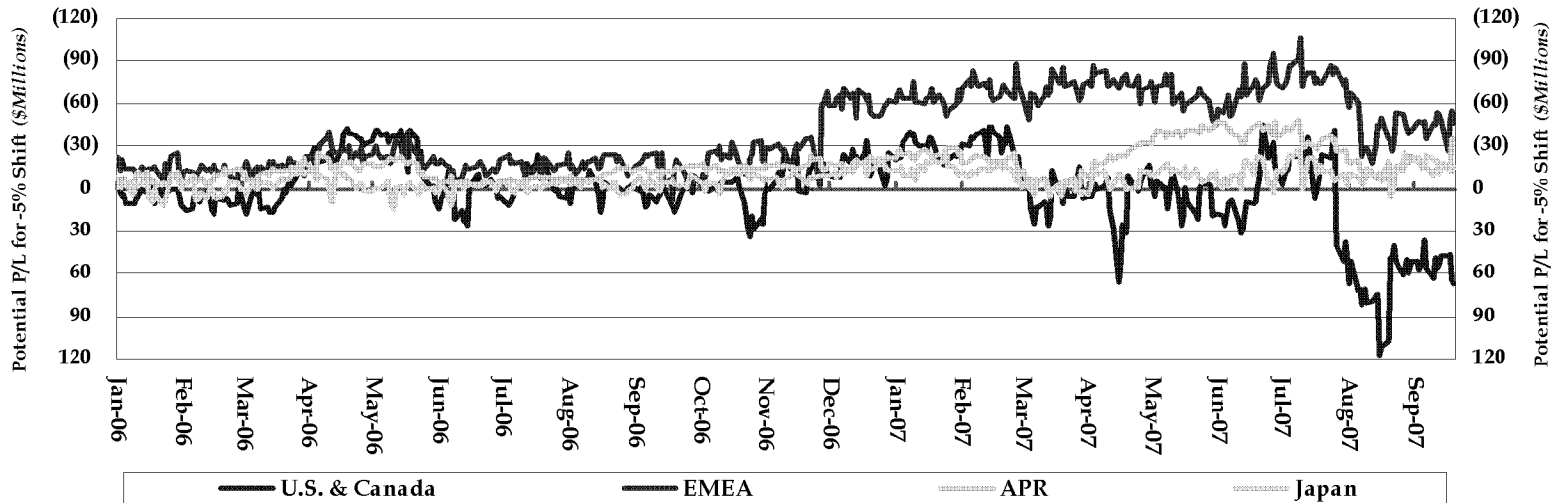
# ML&Co. Currency Risk Trend

*Trading*

## EUR

Potential P/L ($mm)

600
400
200
(10)  (8)  (6)  (4)  (2)  0  2  4  6  8  10
(200)
(400)
(600)

Q4 '06    Q1 '07
Q2 '07    9/20/07

Shifts (%)

## JPY

Potential P/L ($mm)

1,000
800
600
400
200
(10)  (8)  (6)  (4)  (2)  0  2  4  6  8  10
(200)

Q4 '06    Q1 '07
Q2 '07    9/20/07

Shifts (%)

## Emerging Markets FX Loss for +/- 2% Shift

|  | Q1 '06 | Q2 '06 | Q3 '06 | Q4 '06 | Q1 '07 | Q2 '07 | 9/20/07 |
|---|---|---|---|---|---|---|---|

Long

Loss for -2% Shift ($mm)

(45)
(30)
(15)
0

Short

Loss for +2% Shift ($mm)

(15)
(30)
(45)

Q1 '06: (2.1), (6.2), (6.8), (4.5), (2.8), (4.5)
Q2 '06: (4.1), (3.1), (8.8), (2.3), (6.0), (2.5)
Q3 '06: (6.5), (5.1), (7.7), (2.9), (6.6)
Q4 '06: (2.4), (17.6), (5.8), (3.6), (2.2), (3.6)
Q1 '07: (3.7), (12.0), (5.6), (4.2), (1.8)
Q2 '07: (7.6), (23.0), (9.5), (5.5), (1.5), (2.3)
9/20/07: (3.8), (11.8), (8.2), (5.2), (6.3)

■ Asia    ■ EMEA    ▨ Latin America

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# ML&Co. Commodity Risk Analysis
*January 2006 – September 20, 2007*

## Delta by Product



Legend: Americas Power+Gas · EMEA Power+Gas · Oil · Coal · Other
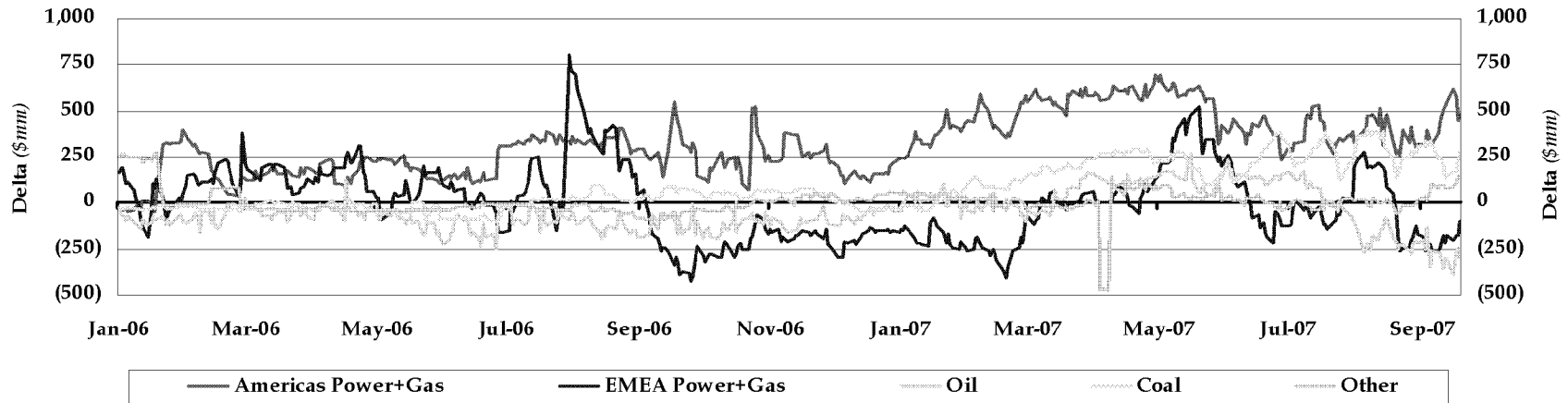
## Regional Delta by Product



Legend: Americas Power · Americas Gas · European Power · European Gas

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