# treasurytoday Exclusive Adam Smith Webinar





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### **Facilitator:**



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## Improving the Management of Cash Portfolio Risk – Treasury Today 2014





## **Overview:**



Financial risk management policies

Monitoring risk at:

Individual security level

Portfolio level

Adam Smith Awards submission - Pfizer's Value at Risk analysis

# **Pfizer Profile**

NEARLY \$552 BILLION Revenue in 2013

56

manufacturing sites worldwide (as of 4Q'13) 150

countries in which Pfizer sells products 10

products with sales >\$1 billion in 2013

250+

**R&D** partner institutions



of Cash Flow from Operations in 2013



to shareholders through dividends and share repurchases in 2011-2013

#### **Approximately**

78,600

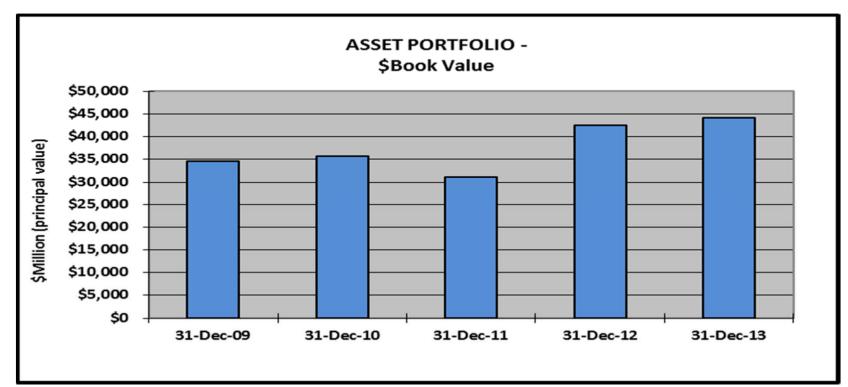
colleagues around the globe (as of 3/31/2014)





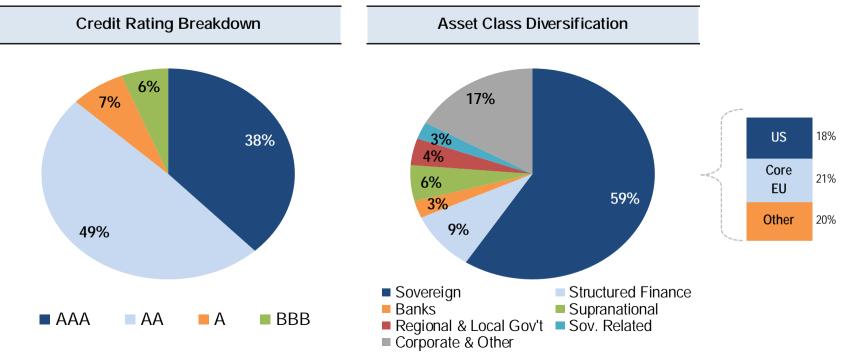
## Pfizer's Investment Portfolio

- Significant growth in cash balances over time.
- Portfolio consists of long and short term debt securities.
- Sovereign, Supranational, Local/Regional Governments and Investment Grade Structured & Corporate Debt.





## Pfizer's Cash Portfolio Credit Rating Profile



## Summary

\*Numbers might not sum due to rounding

- Capital preservation is paramount.
- Almost 90% of the portfolio comprises securities rated AAA or AA.
- Significant exposure to US & Core EU sovereign guaranteed assets.



## Ways to Manage Portfolio Risk

## Manage exposure by setting limits as a percentage of total portfolio.

To a single counterparty, country, sector, rating category

## Setting limit amounts.

Based on credit rating / internal credit analysis

## Maturity restriction.

Based on credit rating / internal credit analysis



**Monitoring Individual Positions** 

Monitor individual portfolio positions via corporate results, rating agencies, sell side equity analyst reports and through economic releases for performance/credit deterioration.

#### Market data for individual portfolio positions for event risk.

□ Use in house proprietary indicator system for active positions as an early warning system. Uses key market data to highlight portfolio positions of interest from a risk perspective

Identify higher relative risk positions in the portfolio for special treatment.



## Portfolio Level Risk Can Be Monitored Through - Value at Risk (VaR)

- VaR is used as an estimate of the level of financial risk within a portfolio over a set time period and at a set level of statistical significance.
- Provides a value of minimum downside expected loss and its probability.
- When estimating VaR for a portfolio, the correlations of the returns on the individual assets is considered. The overall VaR of a portfolio is not just the simple sum of the VaR of sub portfolios.
- By analyzing the trend in VaR over multiple periods a trend VaR can be viewed and an analysis performed to see the positions contributing most to VaR.

### Pfizer's Previous VaR Methodology - Credit Default Swap (CDS)

- A CDS is essentially an insurance contract against credit events.
- The CDS covers risk associated with credit events only and as a result the current premium required to cover such events should be a market view of credit risk associated with the issuer of the underlying bond.
- Observations of Pfizer's CDS approach:
  - Not all issuers have a quoted CDS
  - A large amount of manual interaction
  - Lack of liquidity in CDS can limit accuracy
  - Limited support

#### Evaluation of VaR Tools to Replace CDS Approach

- Credit Metrics, Moody's Credit Edge, Credit Suisse's Portfolio Risk Plus and Bank of America's Lighthouse.
- Over a 3 month period 4 colleagues met with vendors repeatedly, gained an understanding of the analytics, and tested using a sample portfolio.
- Summarized and debated the findings before making a final decision.

#### Reasons for the selection of Lighthouse

- Credit Option Adjusted Spread (COAS) approach which uses issuer's market and financial data to assess risk.
- Web based BofA manage data.
- High level of support provided.



What are COAS and Lighthouse?

- The COAS model and the Lighthouse Portfolio Analytics system are Bank of America Merrill Lynch's proprietary analytical tools, developed and maintained by BofA Merrill Lynch Global Research.
- The BofAML Credit Option Adjusted Spread (COAS) model uses the empirically established strong relationship between credit spread and equity volatility to estimate a forward looking measure of credit risk for corporate bond issuers.
- The BofAML Lighthouse Portfolio Analytics system leverages the issuer-based COAS model to evaluate portfolio-level credit risk and attributes that risk to each investment in the portfolio.



- What data is used in the calculation of risk?
  - Incorporates current market information including an issuer's equity price, equity option implied volatility, outstanding debt and market credit spread to determine an "equity-implied" COAS Credit Risk.
  - COAS Risk is the expected 3m holding period loss due to changes in credit spread and/or default.
  - Links the credit market to the equity market and option market through an innovative application of the classical Merton (1974) model.



- How Lighthouse works in practice
  - Specific file format to be followed.
  - Data including CUSIP/ISIN, principal value of position and maturity required.
  - File upload via FTP.
  - Lighthouse generates a risk report which can also be downloaded in excel.

#### Customizing Lighthouse to meet Pfizer's needs

Lighthouse is based on equity market factors therefore Sovereign positions are not supported. In addition short term securities are not supported such as CP & ECP.

#### Solutions

- Sovereign position risk is assessed using CDS where liquidity is strong. The exposure to a single sovereign issuer is input as a single entry so a money weighted average maturity of each sovereign is calculated and uploaded along with principal value.
- Short term security exposure is summed and a BofA High Grade (AAA-A) short term corporate credit index is used as a proxy.



- Value at Risk (VaR) How it Lighthouse looks analyzing a sample\* portfolio of \$3.15bn.
  - Consisting of:
  - Sovereign exposure through Germany \$500m, US \$500m, Japan \$300m & Singapore \$200m for total sovereign exposure of \$1.5bn.
  - Corporate bond exposure of c.\$1.65bn.

\*The portfolio above is a sample and does not represent any element of Pfizer's investment portfolio

#### **Risk Report**

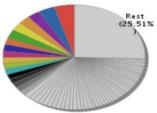
#### **Lighthouse Portfolio Analytics**

Help Contacts

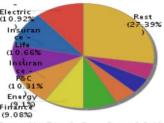
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Dashboard > Corp > EX13 > As Of 31-Jul-2014 > Analysis Date: 01-Aug-2014 I÷.

Risk Report 👻	Input Data 🕶	CDO	Deals 🔻	CLO Deals - Op	otimization	Pe	Performance Beta		
Absolute	Currency USD	~			MV	Bps / % / USD		USD	
Portfolio Stats		Client	Ticker	Issuer	Client CTD	Sprd	and the second s	Ratio	Risk Allocation(by Issu
Market Value ('000)(US	D)	3,150,937		Marca Marcal I Marca	Construction of the		4.00/	~	
Portfolio Duration		2.5 yrs	ASSMU-Z	Mass Mutual Life Verizon Comm Inc	1.61%	20 bps	4.6%	N/A	
Yield to Worst			VZ MRH	Montpelier RE Hidgs Ltd	0.69%	105 bps 178 bps	2.8%	50%	
Portfolio W.A. Spread		28 bps	IVZ	Invesco Ltd	1.32%	80 bps	2.6%	43%	
Spread Pickup		N/A	BKH	Black Hills Corp	0.68%	88 bps	2.6%	24%	
3M Spread Carry ('000) (USE	0)	2,217	QVCN-Z	QVC Inc	0.51%	180 bps	2.6%	24% N/A	
PV01 ('000)(USD)		787	PRU	Prudential Financial Inc	1.46%	95 bps	2.1%	92%	
Number of Positions		217	CBT	Cabot Corp	0.78%	68 bps	2.1%	60%	
Number of Issuers		168	PEG1-Z	Public Service Electric &	1.72%	35 bps	2.1%	N/A	
ssuers Account for 80%		60	LNC	Lincoln National Corp	1.15%	90 bps	1.8%	70%	
Lighthouse Output		Client	JGB-Z	JAPAN	1.93%	7 bps	1.8%	N/A	
		-10 bps	GERMAN-Z	Federal Republic Of Gerr		3 bps	1.7%	N/A	
95% 3M Spread Change 95% 3M MTM Tail		0.26%	AWH	Allied World Assurance H		128 bps	1.5%	148%	the local division of
95% 3M MTM Tail ('000)(USD	0	8,062	SAB LN	SABMiller	1.45%	63 bps	1.5%	107%	
aby and a service of the service of	9		LIBMUT-Z	Liberty Mutual Group Inc		130 bps	1.5%	N/A V	Source: Merrill Lynch, Pierce, Fenner Incorporated.
5% 3M Spread Change		And in case of the local division of the loc	MC-Z	Ford Motor Credit Co LLC		80 bps	1.4%	N/A	incorporated.
5% 3M MTM Tail 5% 3M MTM Tail ('000)(USD)		-10,288	1	Yeel Feerry lee	4 409/	00 bps	4 497	8.497	
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Portfolio Ratio 95% 3M Tracking Tail		80% N/A	Lighthouse Sector		Client	Sprd	Diele	Ratio	
5% 3M Tracking Tail 5% 3M Tracking Tail		N/A	Lighthouse Sector	1	CTD	Spru	RISK	Rattio A	Risk Allocation (by LH Se
5% 3M Tracking Tail		IN/A	Utilities - Electric		10.21%	41 bps	10.9%	62%	Utilities
Maturity Buckets (%MV	/%Risk)	Client	Insurance - Life		6.73%	38 bps	10.7%	59%	-
< 3 yrs		64.8%	Insurance - P&C		8.54%	72 bps	10.3%	104%	Electric
3 to 7 yrs		21.4%	Energy		8.87%	35 bps	9.1%	78%	(10.92%
7 to 10 yrs		13.7%	Finance		5.49%	56 bps	9.1%	70%	Insuran
> 10 yrs		0.0%	Technology		9.51%	53 bps	7.7%	130%	ce -
			Consumer Products		5.63%	27 bps	5.0%	55%	0.66%
Most Conservative / Leas			Telecom - North Amer	<u>ican</u>	5.80%	76 bps	4.9%	135%	Insuran
Rating Buckets (%MV/	%Risk 🦢	Client	Food&Beverage		5.92%	31 bps	4.9%		ce -
AA - or better		54.8%	Basic Industries		3.14%	44 bps	4.8%	77%	P&C
Single A		21.9%	NonCorp - Higher Rat	ed	8.31%	3 bps	4.2%	103%	(10.31%
Triple B		22.7%	Media		3.74%	58 bps	3.7%	86%	Energy
Double B		0.5%	Capital Goods - Manu	facturing	2.43%	29 bps	3.1%		Firfant
Single B		0.0%	Retail		3.53%	29 bps	2.3%		(9.08%)
Triple C or Below		0.0%	Transportation		2.28%	70 bps	2.3%	77%	Source: Merrill Lynch, Pierce, Fenner
Not Rated		0.0%	Autos&Autoparts		2.11%	36 bps	1.9%	107%	Incorporated.



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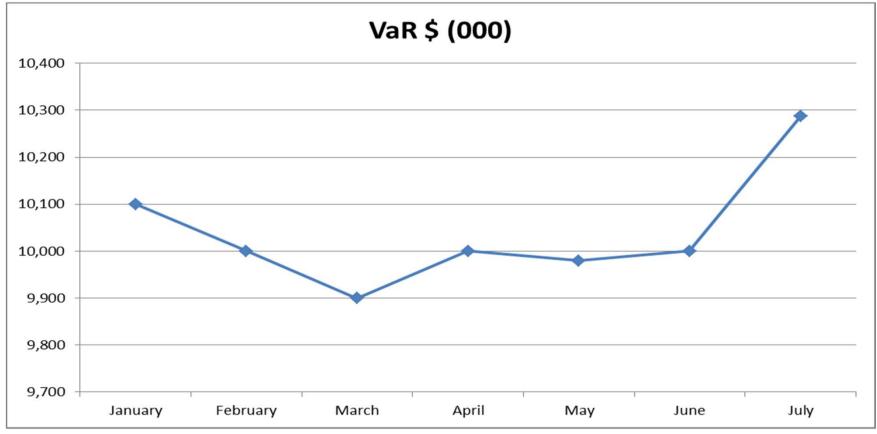


Picture source: Bank of America Merrill Lynch

From the risk report we can extract the data and perform our own analysis. 



## VaR Trend Over Time

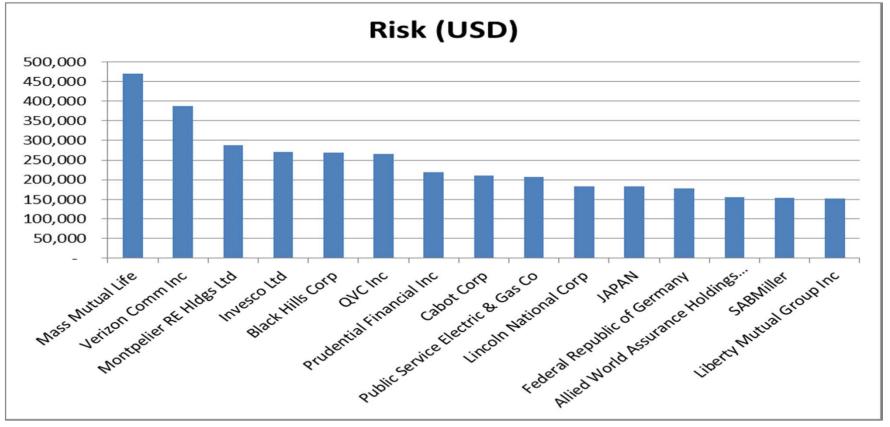


July value source: Bank of America Merrill Lynch

□ An example, for illustrative purposes only, of how the VaR trend for the sample portfolio could look over time.



## Largest VaR Contributors

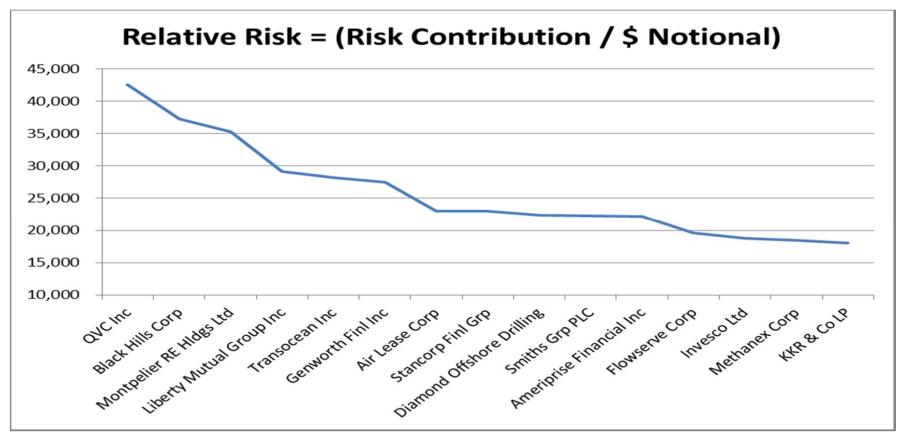


Data source: Bank of America Merrill Lynch. Value as of date 1<sup>st</sup> August 2014.

Mass Mutual Life contributes \$470k to portfolio VaR.
Verizon contributes \$387k to portfolio VaR.



## **Riskiest Positions**



Data source: Bank of America Merrill Lynch. Value as of date 1<sup>st</sup> August 2014.

□ This graph represents the risk contribution of a position relative to the size of the exposure of that position. This allows us to highlight the positions which Lighthouse calculates to have the highest relative risk within the portfolio.

#### How is the output of the analysis used?

- Gives a better understanding of the impact on risk of portfolio movements and the influence of market factors from month to month.
- Ensure comfort with positions contributing most to VaR.
- Typically the positions with the highest relative risk in the portfolio are externally managed.
  - Triggers internal review of the position
  - Used as a discussion point with external managers
  - Understand why the position has high relative risk

#### Benefits to Pfizer of using this new approach to VaR?

- Using more accurate market data to assess the risk of individual positions in the portfolio.
- Strong model analytics
- Web based Bank of America maintains the database of data including up to date market data.
- Quicker to run VaR analysis due to less manual interaction with data.
- Better product support.

# treasurytoday Question Time





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