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# Annual Conference

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## Foreign Exchange Hedge Optimization

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# Overview

## Foreign Exchange Hedge Optimization

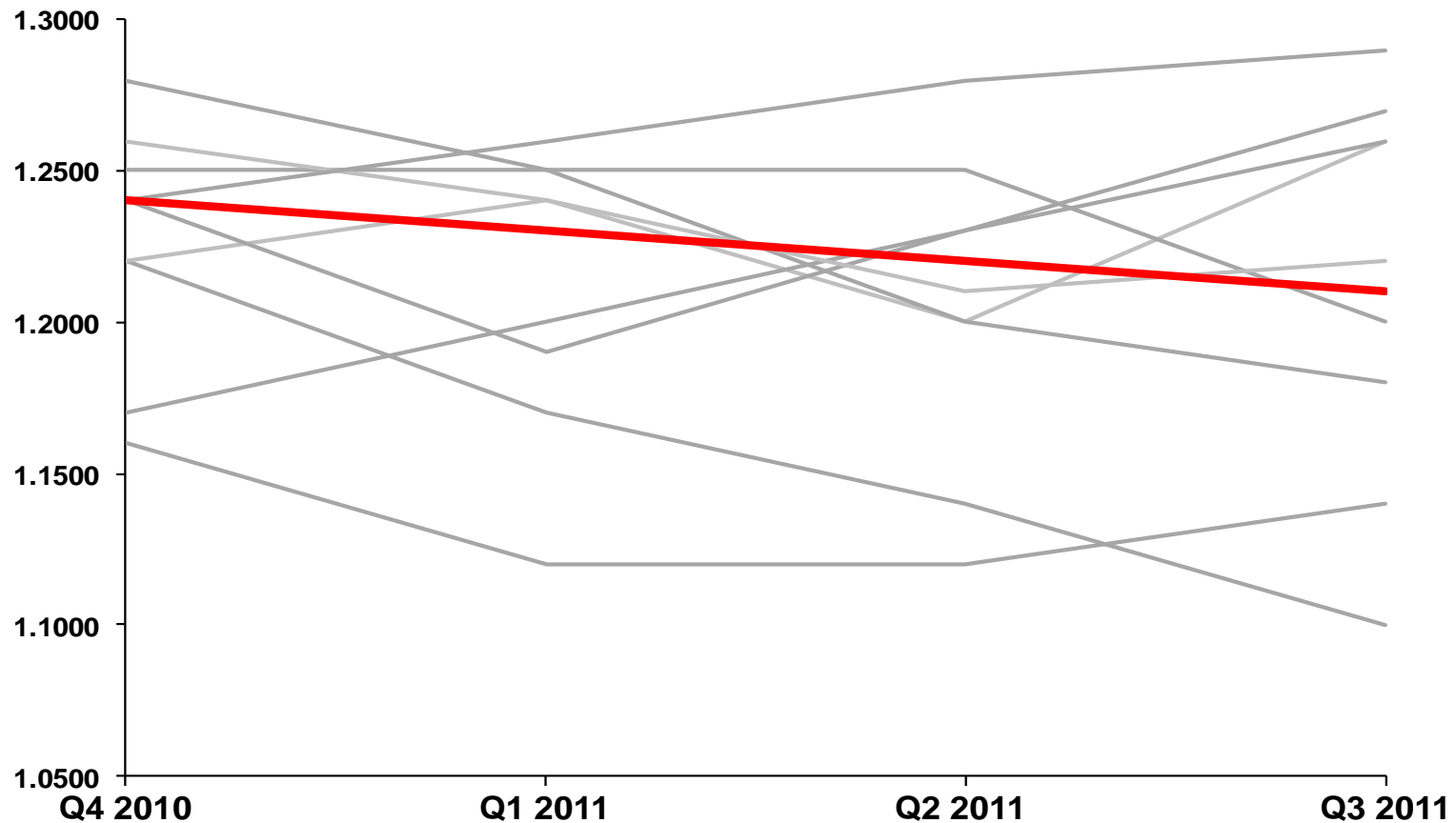
- Corporations are faced with managing many types of risk
  - Core Business Risk
  - Market Risk
- The dramatic rise in volatility over the past few years has increased the potential **market risk** of loss
- Execution is the easy part - an optimal risk management program should emphasize risk quantification
- Today we focus on stronger parameters for risk quantification, a key component of a FX Risk Management Program

# Overview

## Foreign Exchange Hedge Optimization

9/30/11  
1.3390

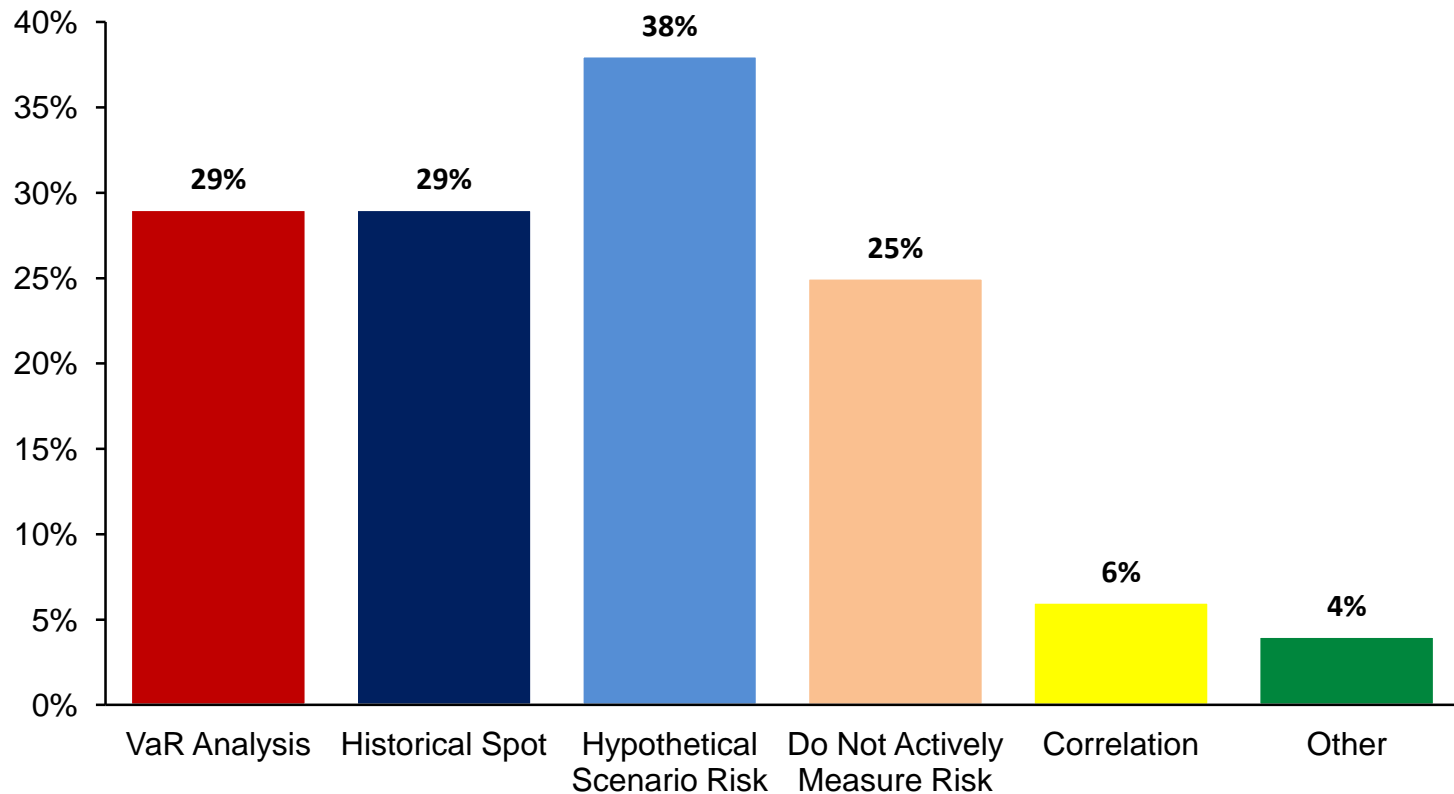
Bank Forecasts for EUR/USD as of Sept 1, 2010



# Overview

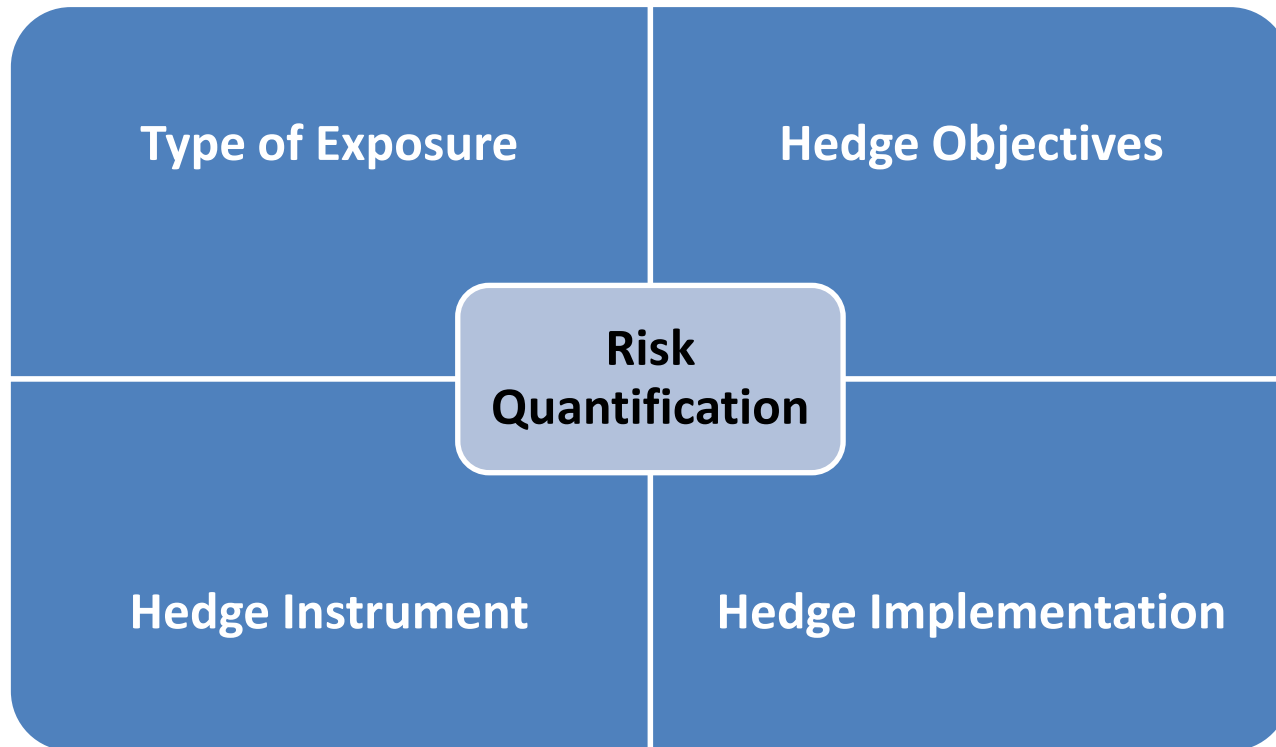
## Foreign Exchange Hedge Optimization

“Do you actively measure potential risk of loss from currency exposures?”



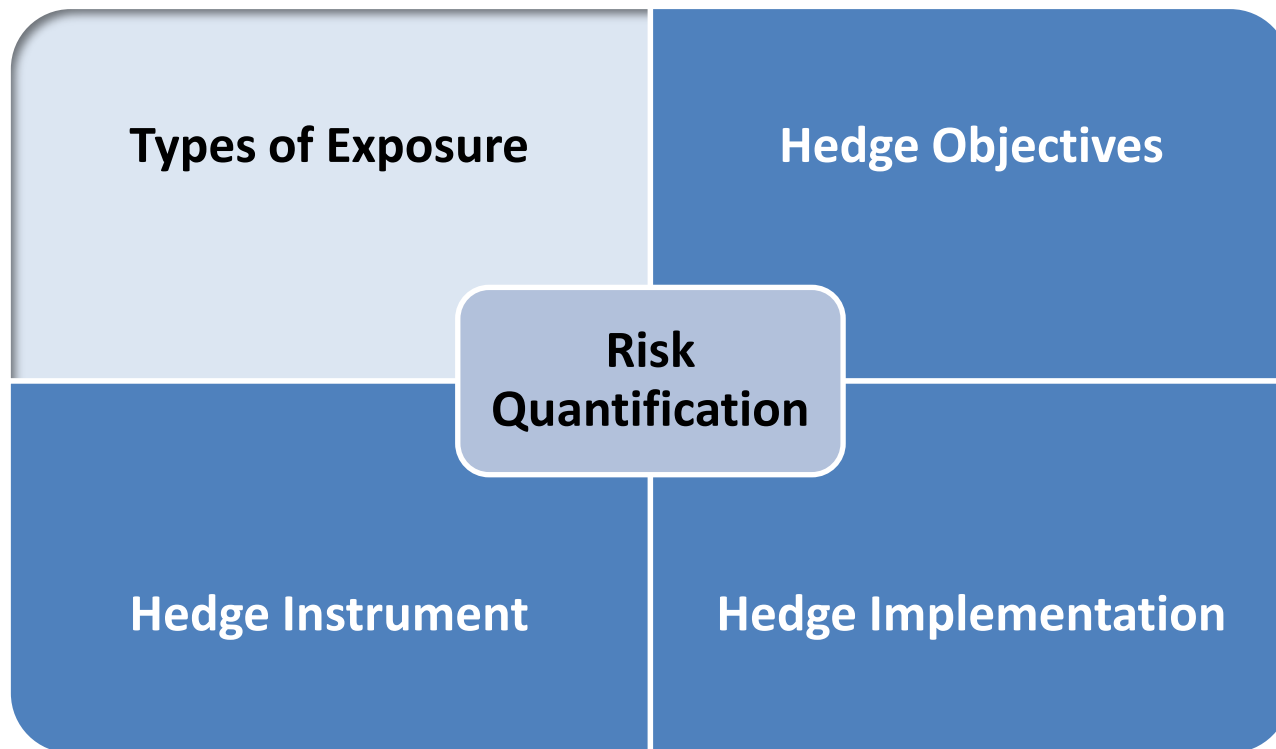
# Outline

## Key Parameters to a Strategic Hedging Program

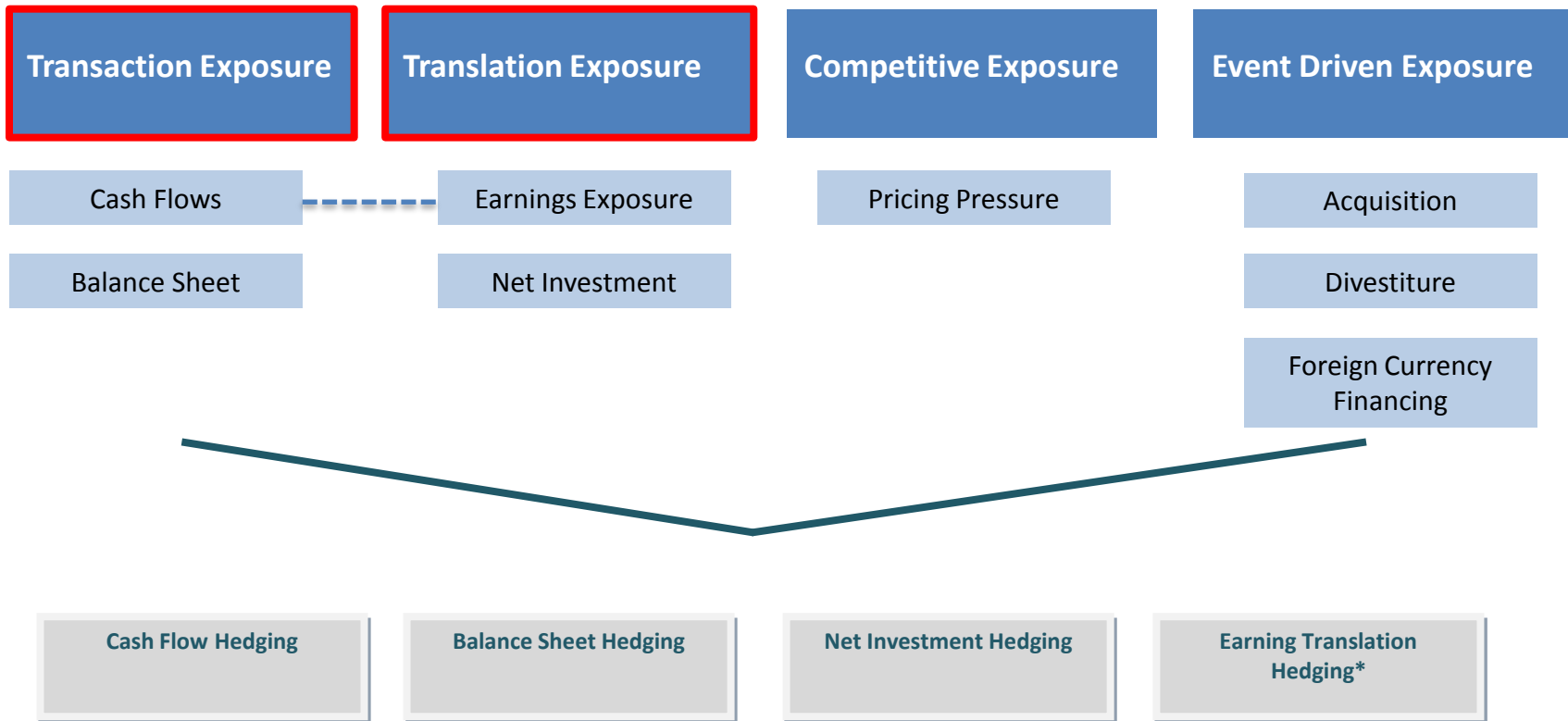


# Outline

## Key Parameters to a Strategic Hedging Program

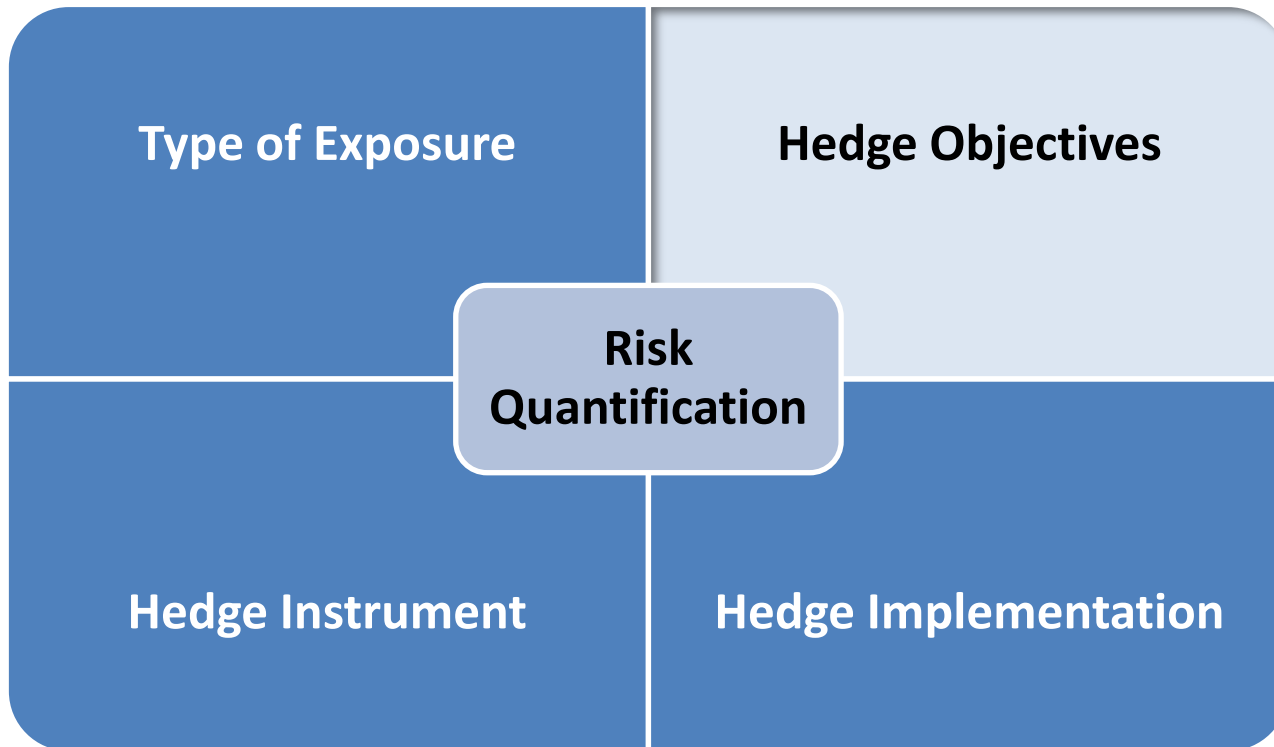


# Types of Exposures



# Outline

## Key Parameters to a Strategic Hedging Program



# Hedge Objectives

## Best Practices

Identify **unique** hedging program's objectives before identifying what exposures to address

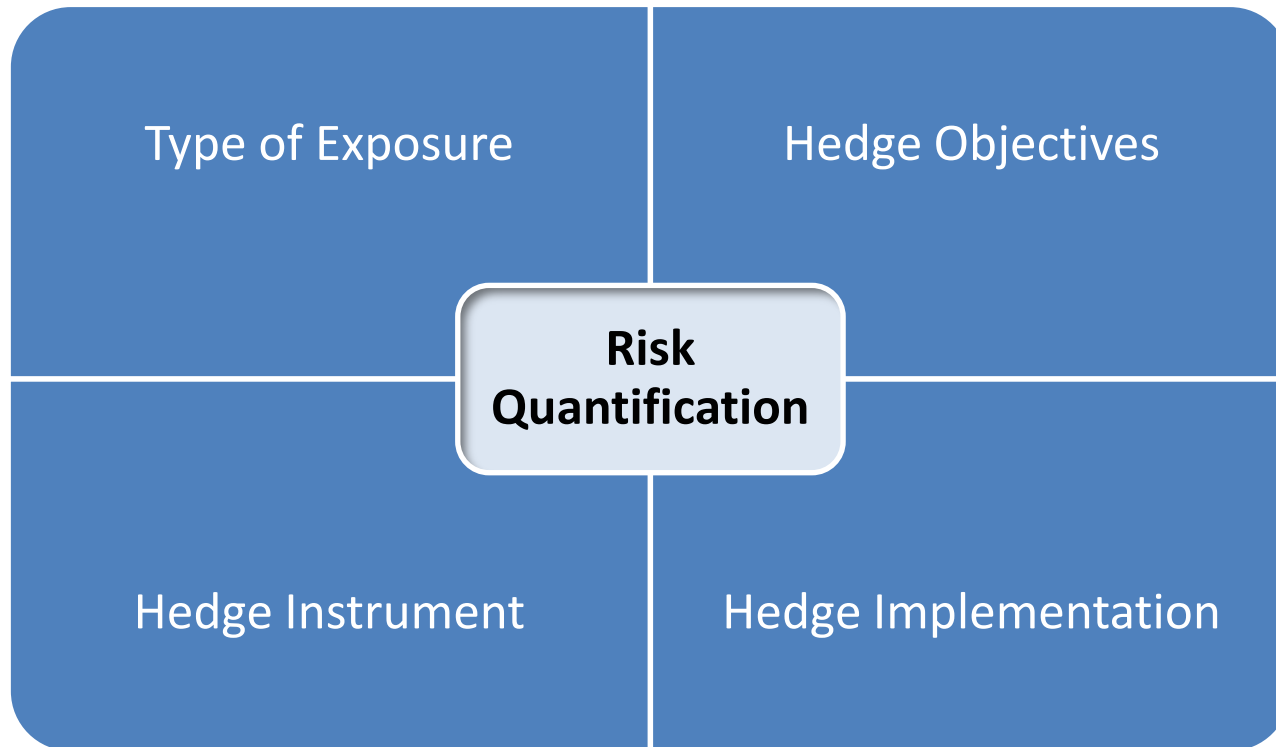
### Objective

### Important for...

- |  |  |
|--|--|
| ✓ Protecting cash flows from subsidiaries back to the parent   | Metric-focused and/or highly levered companies           |
| ✓ Protecting foreign earnings, even though they may not result in cash flows   | Businesses with low margins                              |
| ✓ Reducing volatility of quarter-on-quarter currency translation rates to minimize impact on consolidated financial statements | Investors that perceive high risk in the business model  |
| ✓ Protecting against unfavorable moves in currencies, while benefitting from favorable moves                                   | Currencies that are likely to appreciate in the long run |
| ✓ Containing economic risk of loss from sharp, unfavorable move in currencies  | Emerging Markets   |

# Outline

## Key Parameters to a Strategic Hedging Program



# Risk Quantification

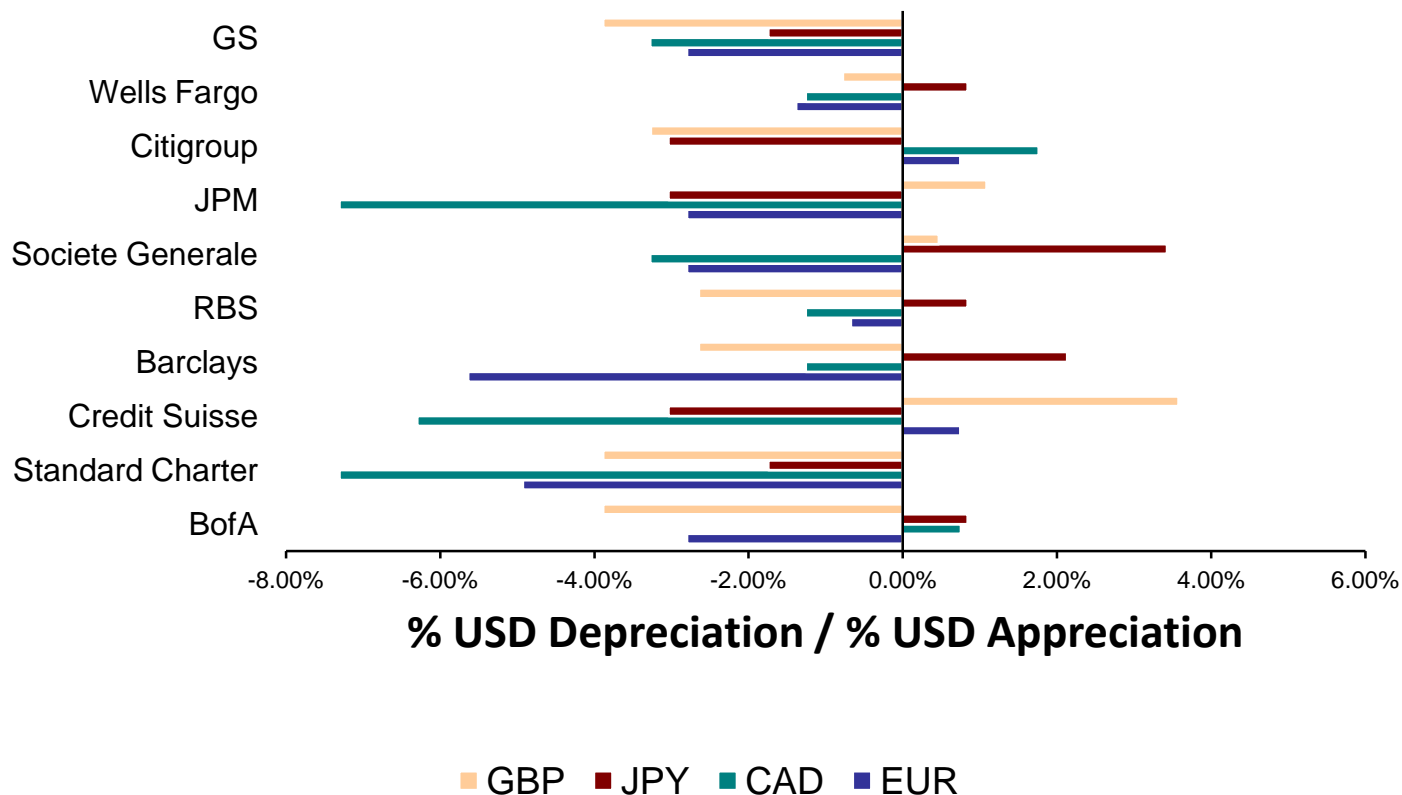
## VaR as a Key Parameter

- FX forecasts and historical moves are often used as risk evaluation metrics
  - ✗ *FX forecasts are not market-based and show a large variance*
  - ✗ *Historical movements are not forward-looking*
- We therefore advocate calculating Value at Risk (VaR) based on implied volatilities and correlations
  - This metric is both market-based and forward-looking

# Risk Quantification

## Re-examination of Risk Parameters

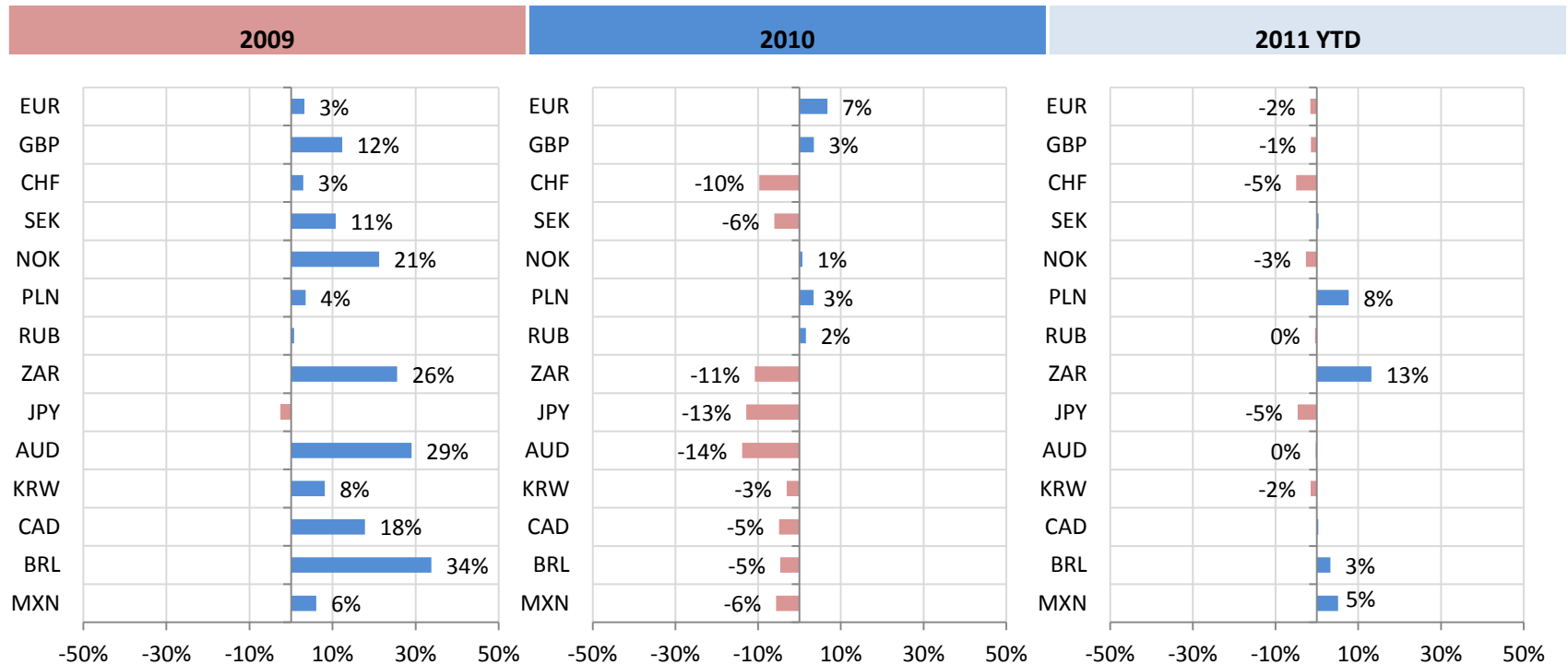
### Large Variance in Bank Forecasts



# Risk Quantification

## Re-examination of Risk Parameters

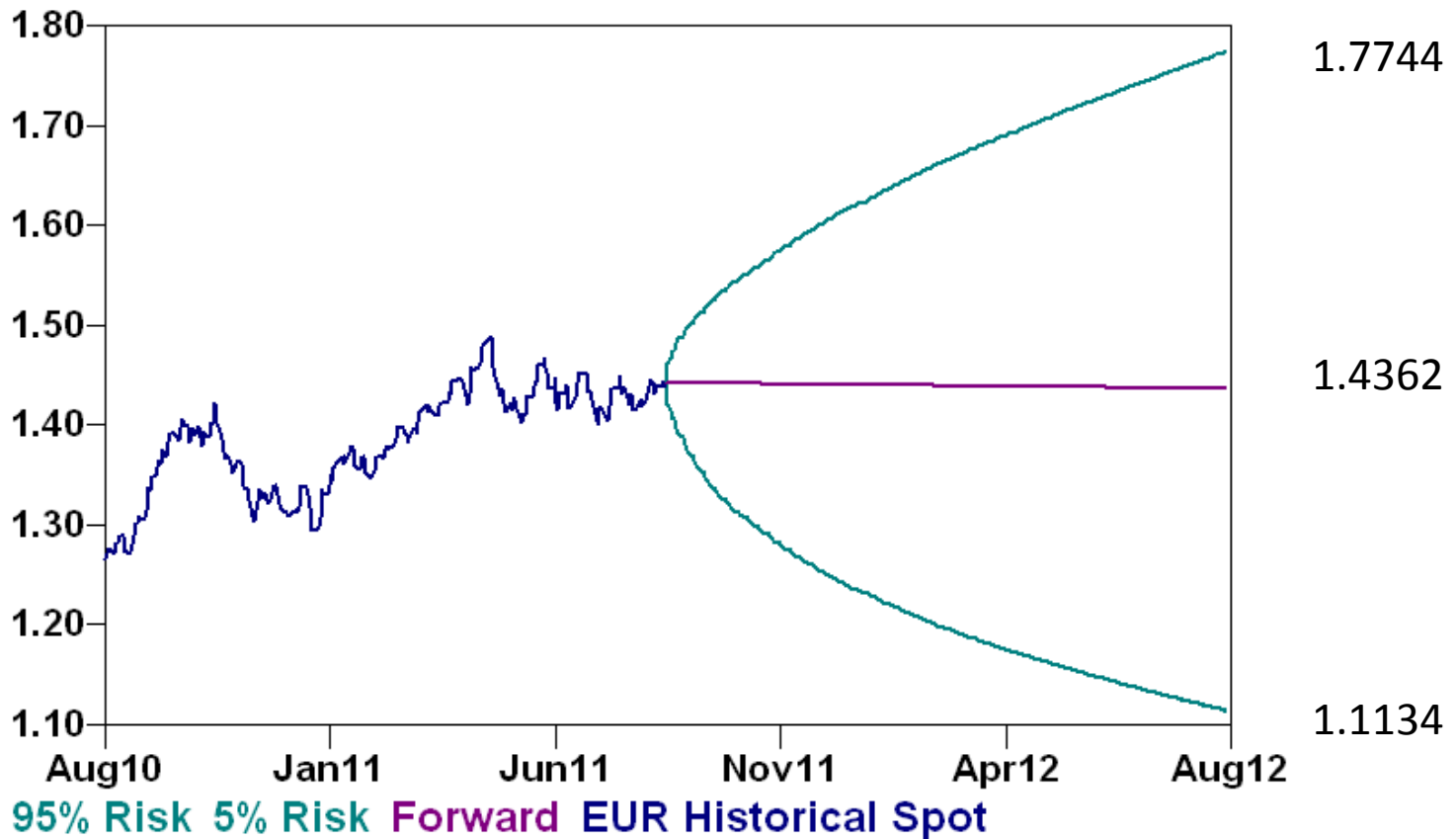
Historical Moves Show Greater than +/-10%



# Risk Quantification

## How to Quantify Risk?

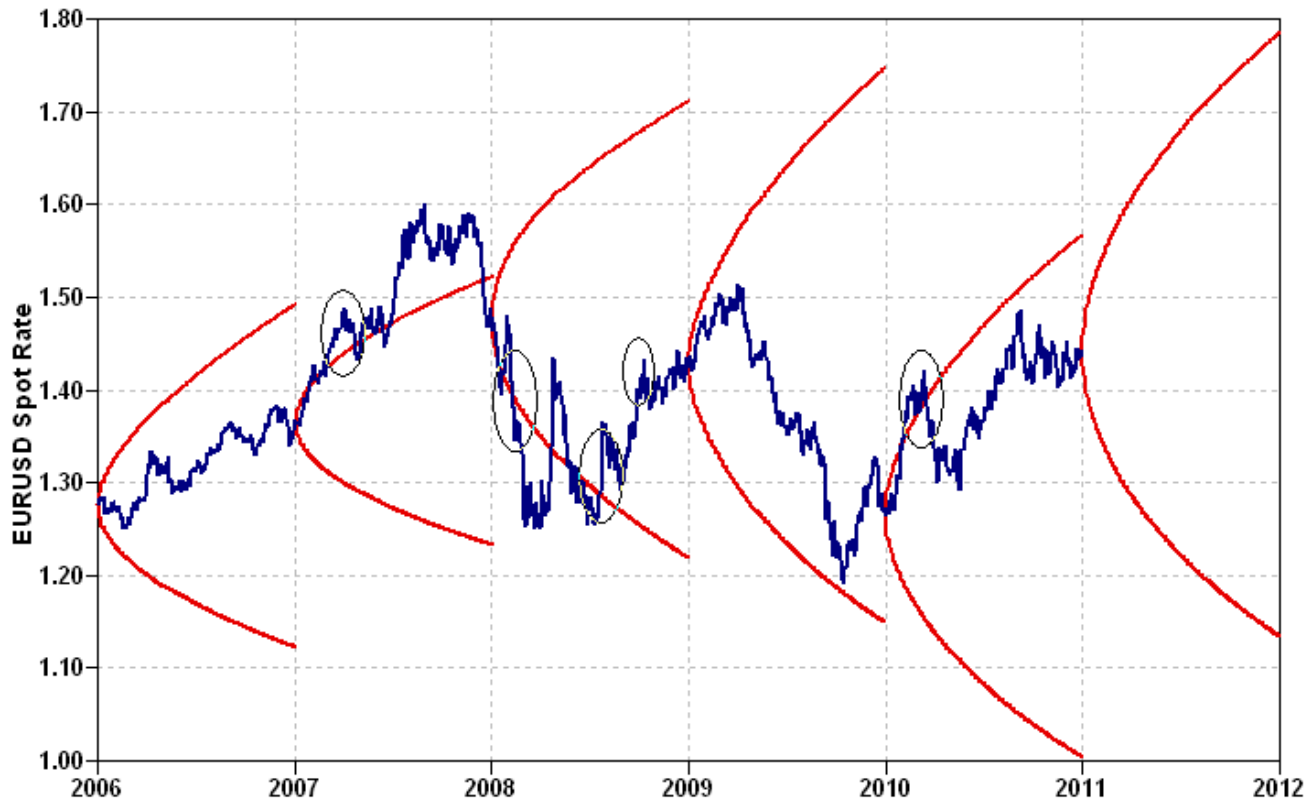
Using Forward Looking Parameters: VaR (Value at Risk)



# Risk Quantification

## How to Quantify Risk?

Large Currency Swings Have Occurred: Two Standard Deviation Moves in the Past 5 Years



# Risk Quantification

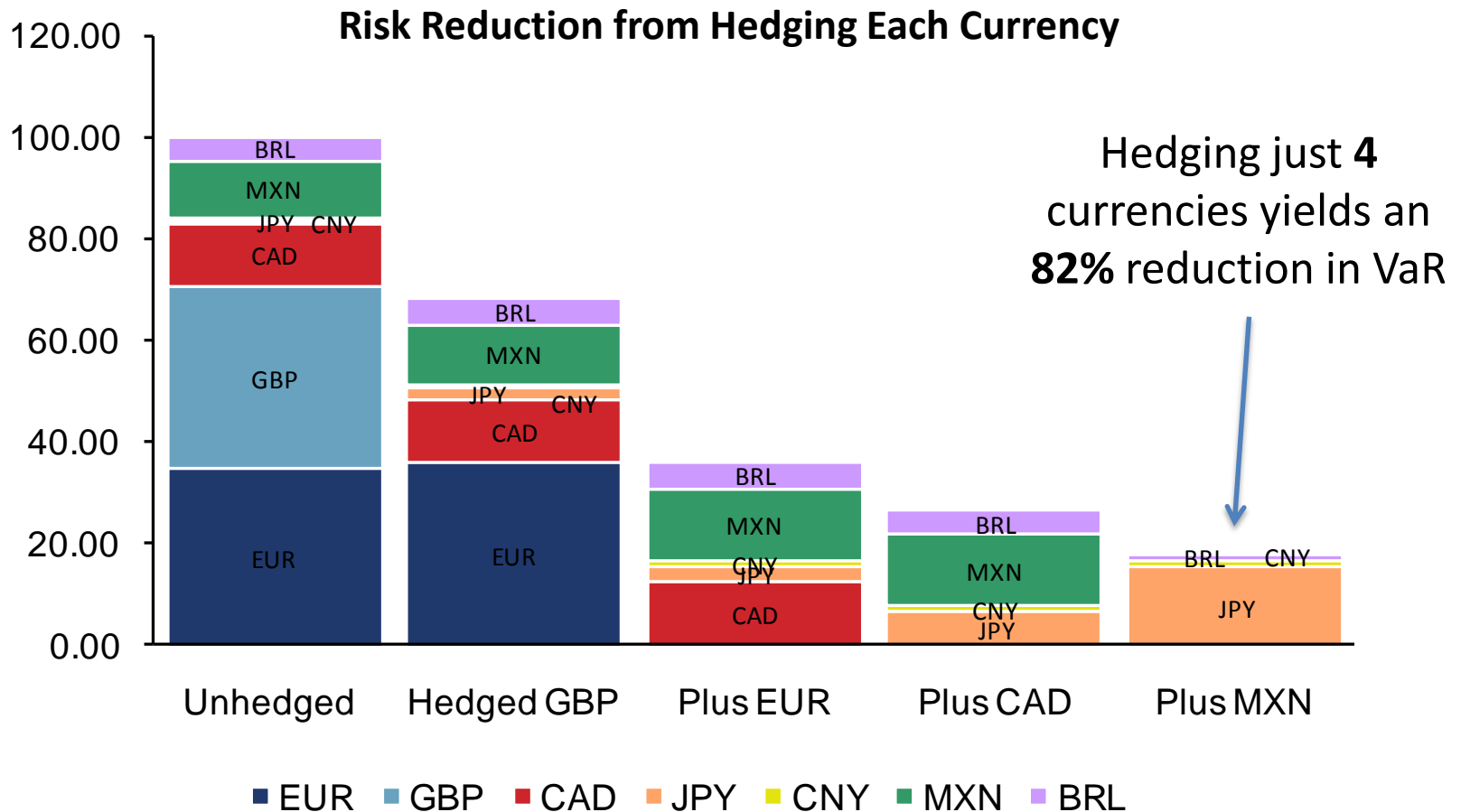
## A Case Study

Currency	Yearly Exposure (USD Value)
EUR	175
GBP	175
CAD	80
JPY	80
CNY	80
MXN	80
BRL	30

		<u>Unhedged (1 Year Tenor)</u>		<u>With Hedges (Assuming Forwards)</u>		
1 Year Implied Vols	Currency	Individual 5%-tile Risk	Diversified 5%-tile Risk	Hedge Percentage	Individual 5%-tile Risk	Diversified 5%-tile Risk
14%	EUR	39.6	35.1	100.0%	0.0	0.0
12%	GBP	33.1	27.1	100.0%	0.0	0.0
12%	CAD	15.3	10.2	100.0%	0.0	0.0
13%	JPY	16.6	4.4	0.0%	16.6	14.2
4%	CNY	5.7	1.3	0.0%	5.7	2.3
16%	MXN	21.4	12.3	100.0%	0.0	0.0
16%	BRL	7.9	4.6	0.0%	7.9	3.0
		139.7	95.0		30.2	19.5

# Risk Quantification

## A Case Study



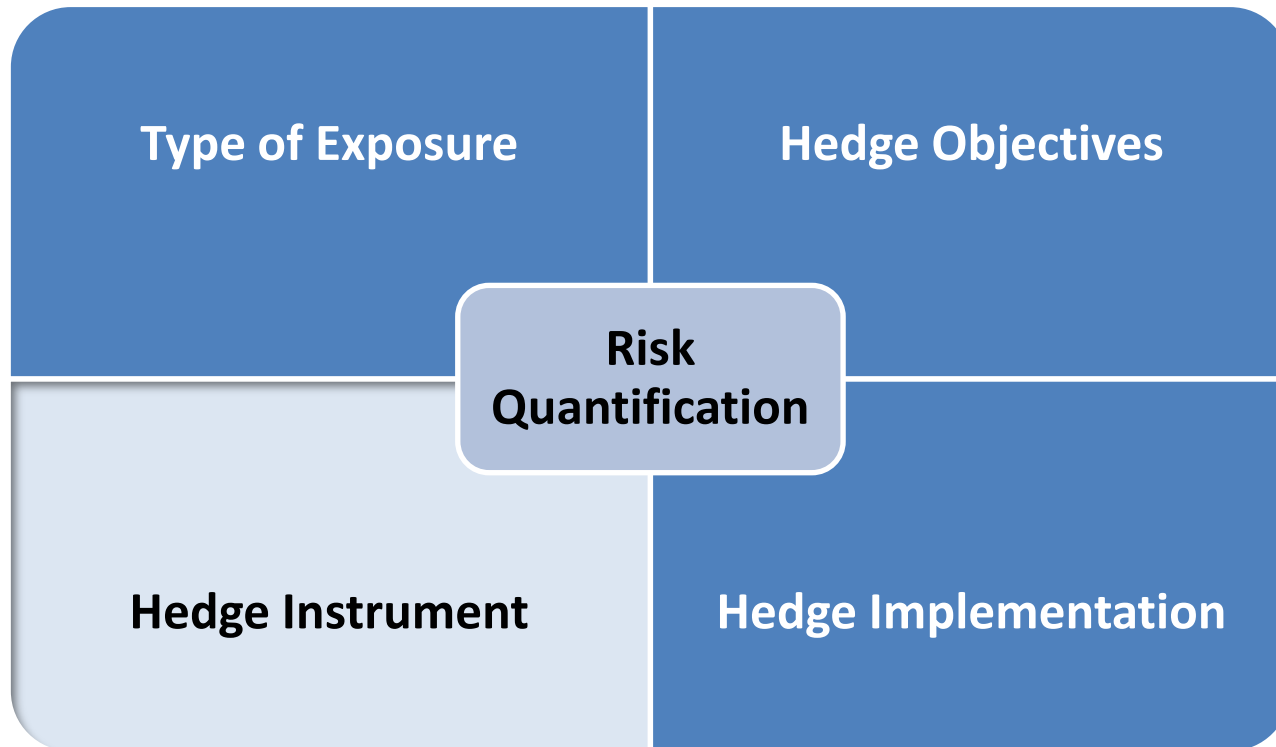
# Risk Quantification

## Conclusion

- Set a Risk Tolerance Limit
  1. Calculate the VaR of the unhedged portfolio
  2. Determine how much risk the company can tolerate
    - Benchmark Examples: EBITDA, EPS, Debt Covenants
  3. Design the hedging program to reduce risk below the tolerable threshold

# Outline

## Key Parameters to a Strategic Hedging Program



# Hedge Instrument

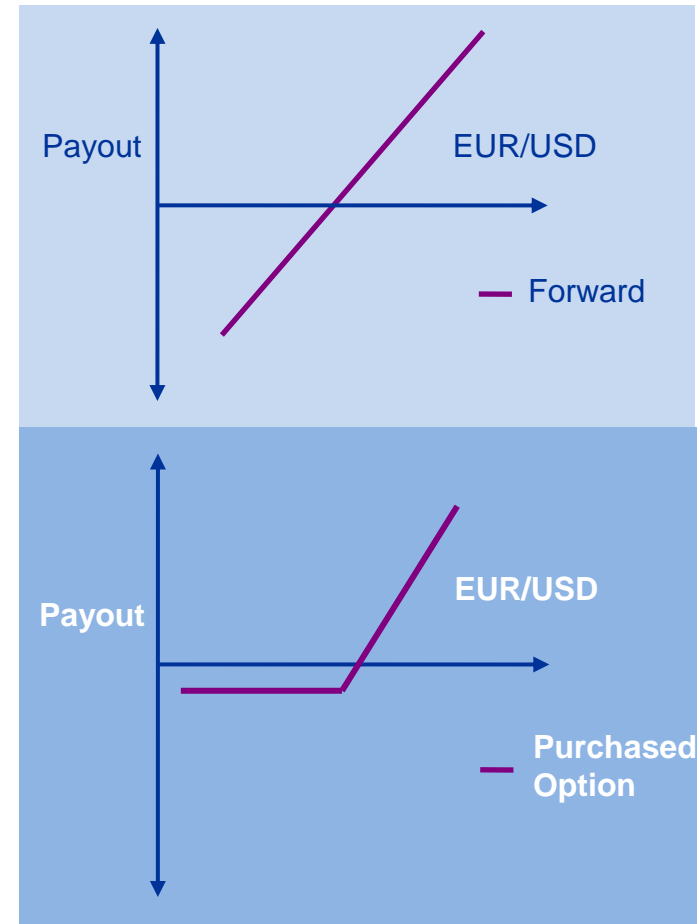
## Forwards vs. Options

### Pros/Cons of FX Forwards

- ✓ Full Protection
- ✓ Zero Cost at Inception
- ✗ No Participation in Favorable Moves
- ✗ Potential unlimited cash drain
- ✗ Requires Credit Lines

### Pros/Cons of FX Options

- ✓ Known Worst-Case Loss
- ✓ Participation in Favorable moves
- ✓ Flexibility
- ✓ No Credit Constraint
- ✗ Upfront Premium
- ✗ Same protection as forward but pay premium

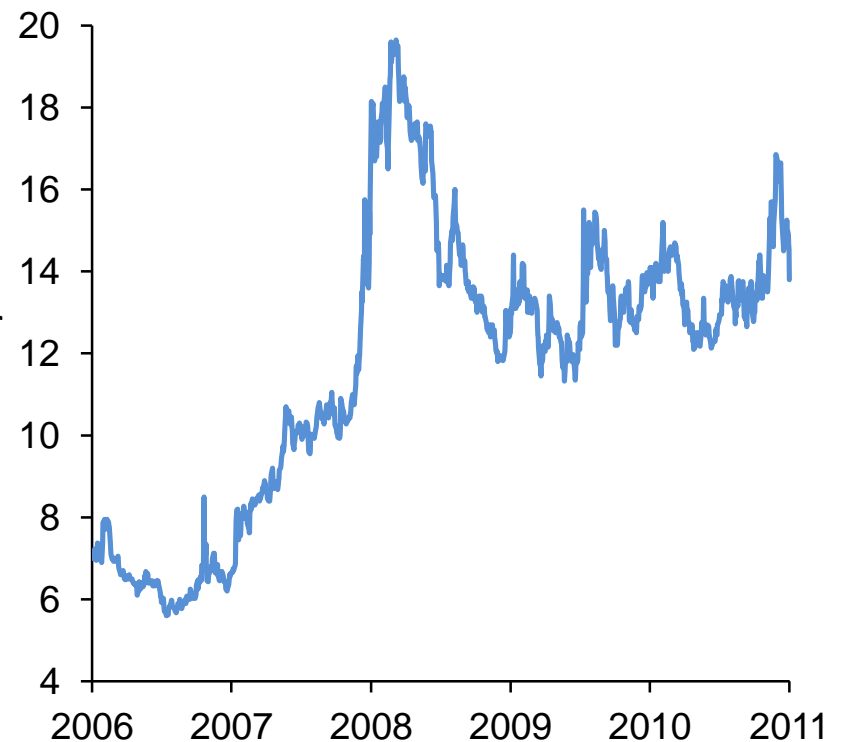


# Hedge Instrument

## Options in Today's Volatility Environment

- Increased volatility post 2008 has made using options more expensive
- Options, however, still remain important in corporate hedging programs
  - Premium budgets often do not cover cost of hedging completely with options
  - We outline how to maximize VaR reduction with a limited premium budget

EUR/USD 12m Implied Volatility



# Hedge Instrument

## Using Options on a Limited Premium Budget

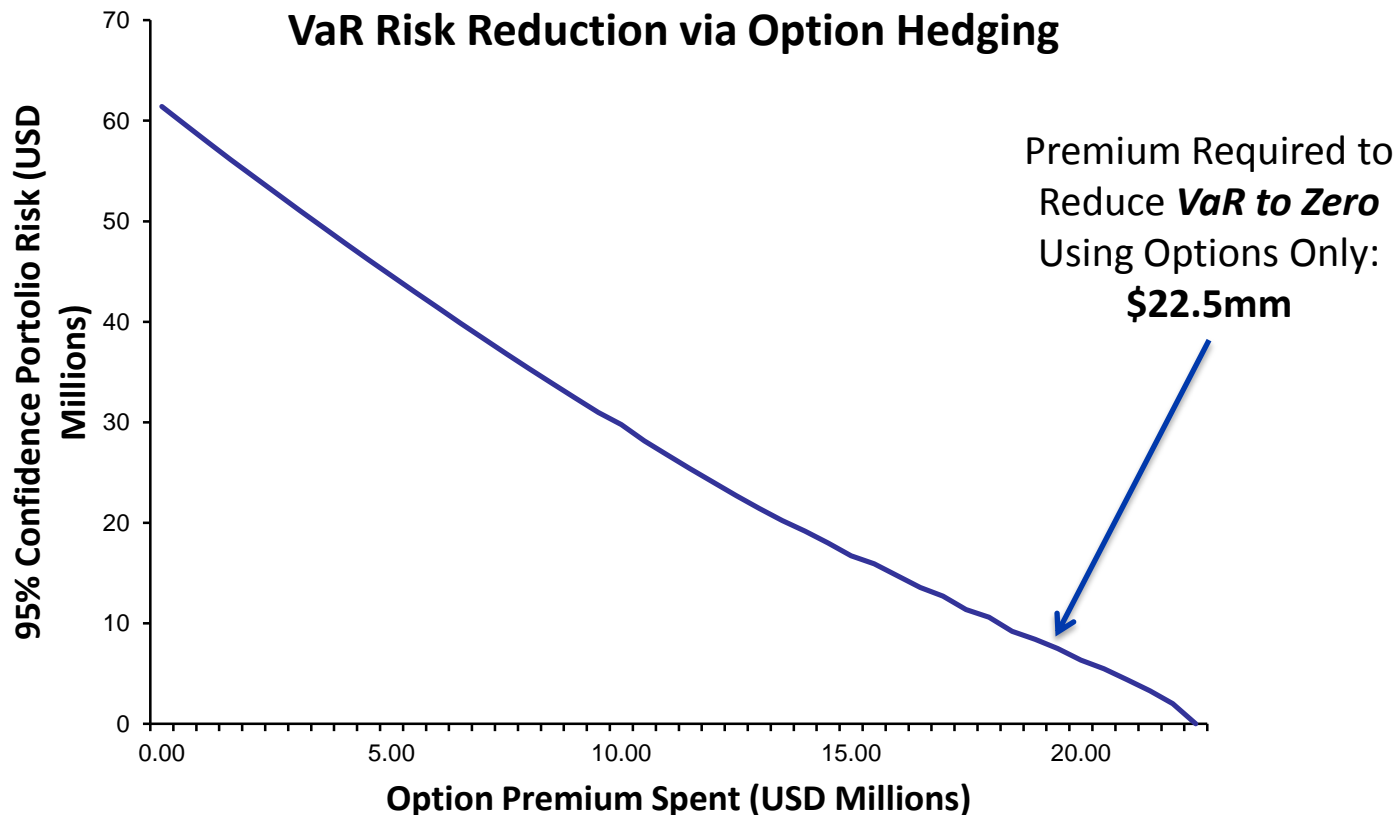
### Case Study: Optimal Allocation of a \$10mm Premium Budget

- Uses exposures from previous case study
- Determines allocation based on VaR, Correlation and Implied Vols
  1. Exposures creating highest VaR in portfolio(net correlation analysis)
  2. Compares implied vols of various maturities for cost effectiveness

Premium \$10mm: % Exposure to Hedge per Month												
	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12
BRL	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CAD	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	90.34%	44.09%	80.86%	0.00%	0.00%	0.00%
CNY	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
EUR	0.00%	0.00%	39.49%	100.00%	98.39%	98.86%	98.77%	98.60%	98.14%	98.10%	99.75%	70.38%
GBP	0.00%	0.00%	0.00%	0.00%	90.48%	98.08%	100.00%	94.96%	100.00%	98.38%	31.49%	0.00%
JPY	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MXN	0.00%	0.06%	0.00%	0.00%	0.00%	13.43%	0.00%	99.11%	8.28%	8.02%	0.00%	0.00%

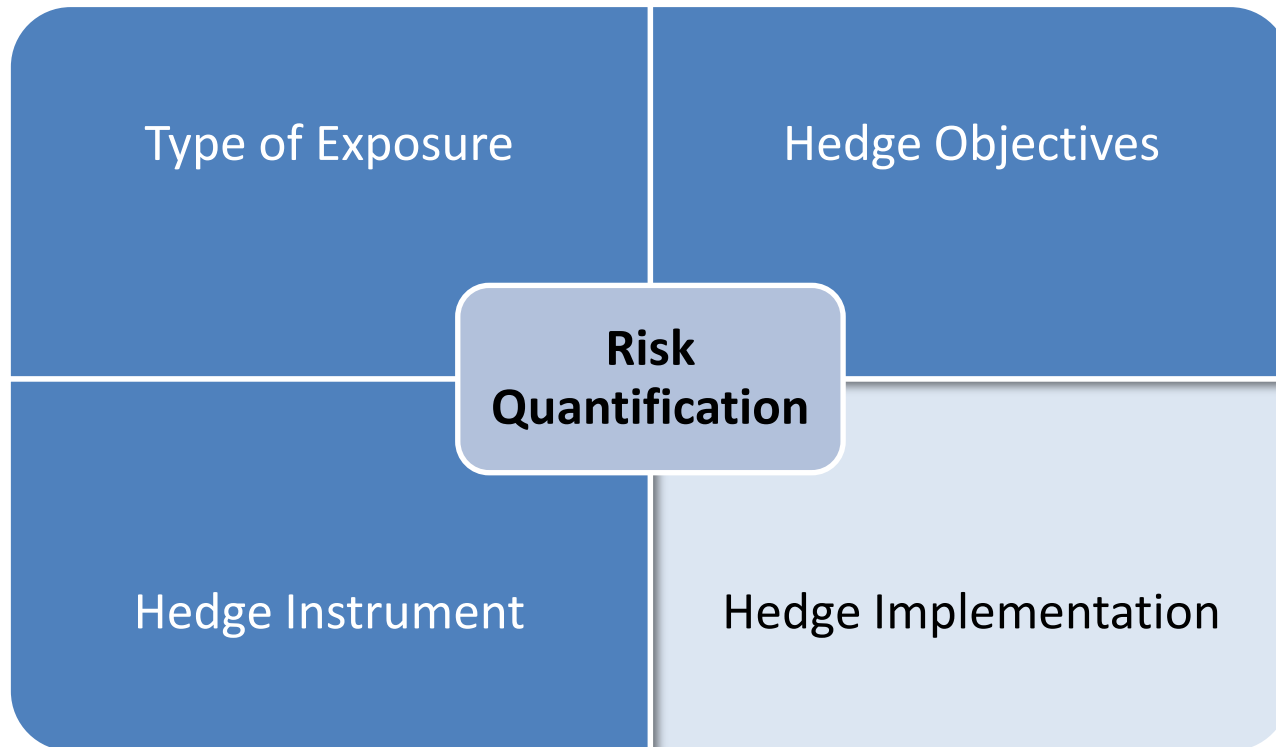
# Hedge Instrument

## Using Options on a Limited Premium Budget



# Outline

## Key Parameters to a Strategic Hedging Program

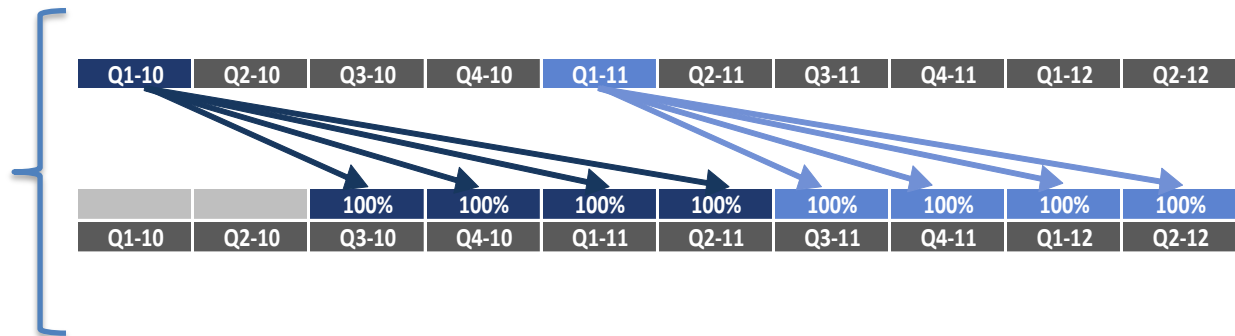


# Hedge Implementation

## Execution Strategy

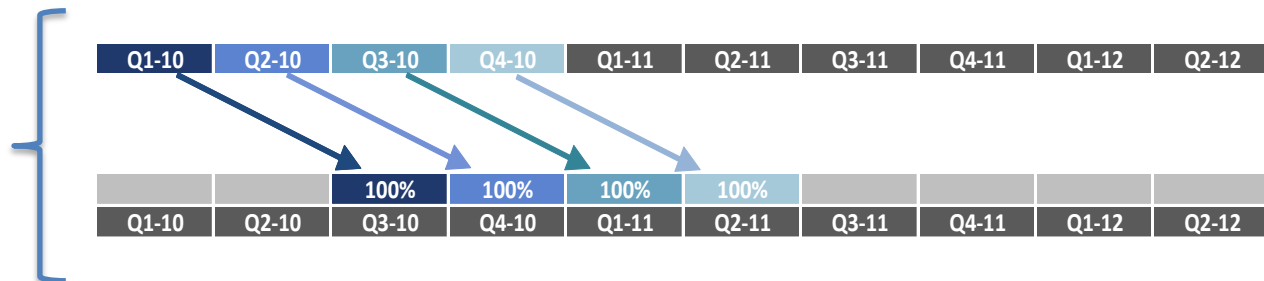
### Concentrated Hedging Program (6%)

At the start of the year, the quarterly cash flows expected for the next year are hedged



### Fixed Term Program (20%)

At the start of the quarter, the cash flow expected six months later is hedged

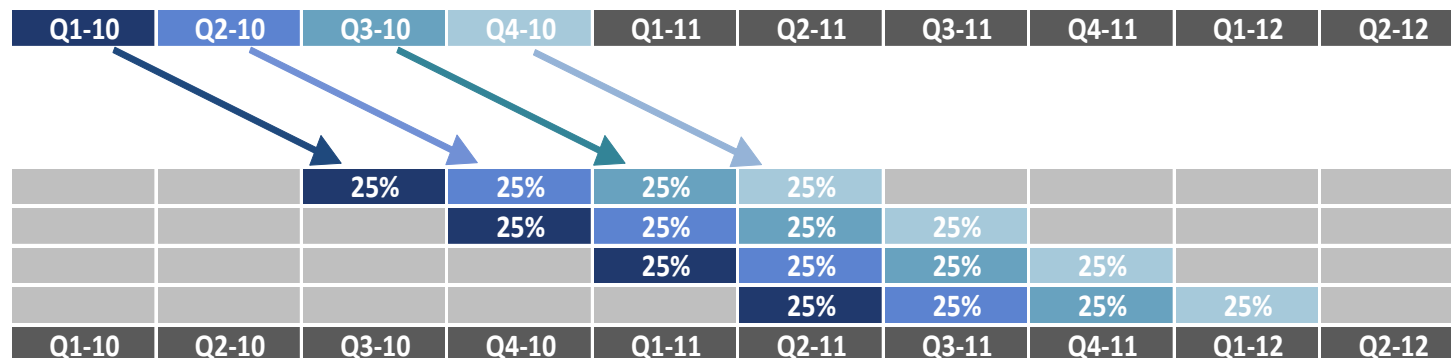


# Hedge Implementation

## Execution Strategy

### Layered Hedging Program (56%)

- A layered hedging program consists of implementing a hedge gradually over several quarters
- The final hedged rate will be equal to the average of the forward rate at each of those quarters

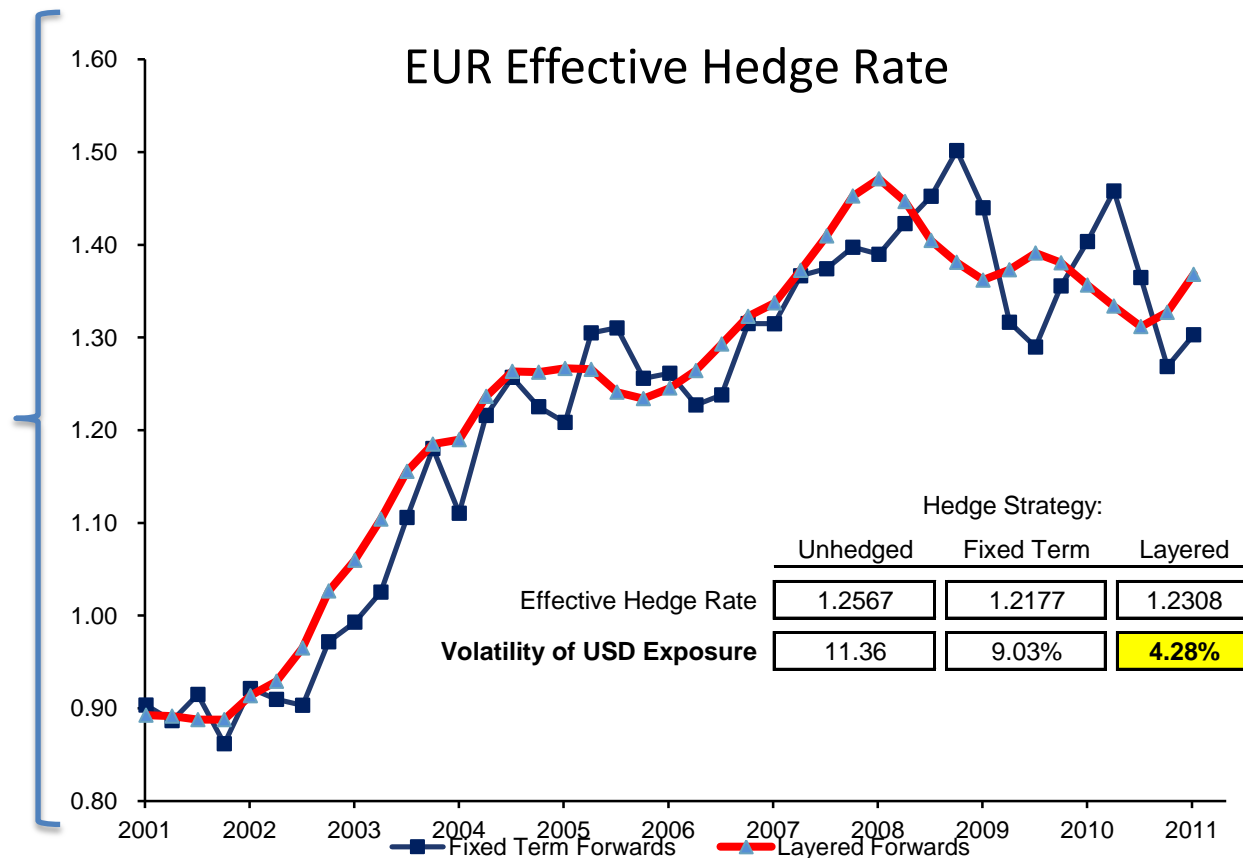


A layered cash flow hedging program best reduces the impact of currency moves on earnings and free cash flows – **leading to less volatility in EPS.**

# Hedge Implementation

## Case Study: Minimizing Volatility with Layered Hedging

For the historical period shown, layering with forwards four quarters out **reduced the volatility of quarter-on-quarter exposure by almost 50% versus the fixed term strategy**





# FX Hedging - How VF Does it

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**Patrick J. Guido**  
Treasurer

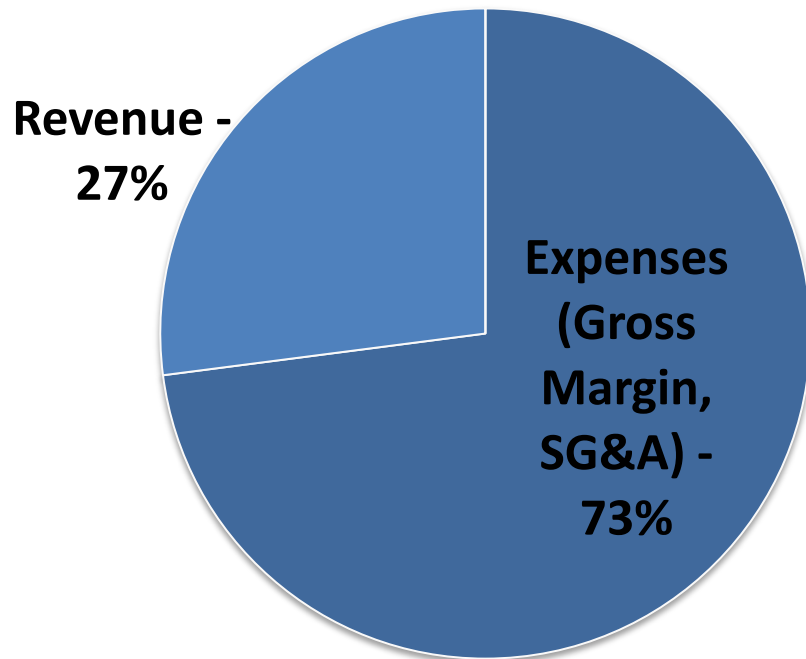
# Company Overview

- NYSE Ticker: VFC
- Market Capitalization: \$12 Billion
- Annual Sales: \$10 Billion
- Business: Global apparel manufacturer/retailer
- **International Sales: \$3 Billion**
- **Countries: 125**
- **Currencies: 50**



# FX Risk Assessment











- VF is exposed to multiple forms of currency risk, the vast majority of which comes from anticipated transactions (e.g., sales, inventory purchases)



***Total Transactional Exposure \$1.2B***

# Risk Concentration

- Over 90% of VF's FX transaction exposure comes from five currency pairs:

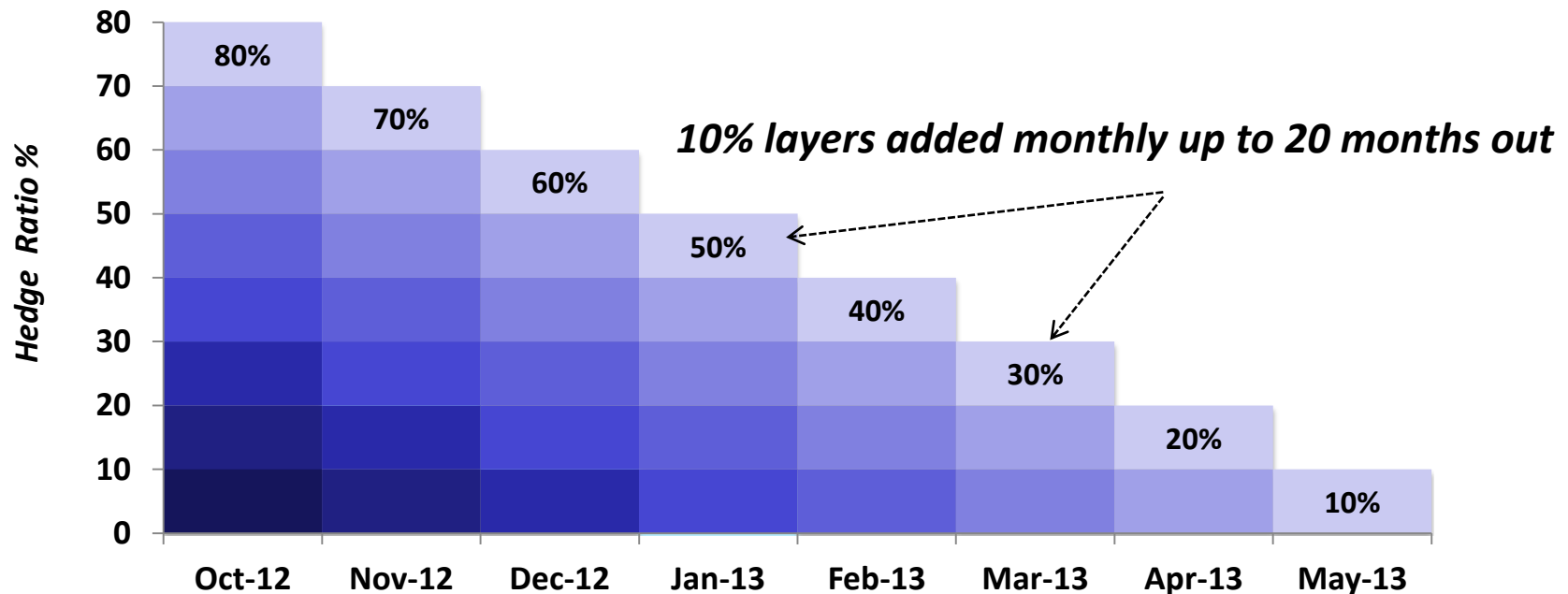
<i>Exposure</i>	<i>Functional</i>	<i>Exposure Type</i>	<i>2011 Forecasted USD Exposure</i>	<i>Type of Hedge</i>	<i>Hedge Instrument</i>
		Expense (short USD)	\$600M	Cash Flow	Forward
		Revenue (long GBP)	\$230M	Cash Flow	Forward
		Revenue (long PLN)	\$50M	Cash Flow	Forward
		Expense (short USD)	\$150M	Cash Flow	Forward
		Expense (short MXN)	\$180M	Cash Flow	Forward

# FX Hedging Process

1. Obtain monthly forecasted exposures from subsidiaries:
  - Product Sales
  - Inventory Purchases
  - Production Costs (e.g., payroll)
2. Consolidate natural hedge offsets where appropriate
3. Determine size, maturity and direction of hedges
  - Add systematic hedge layers (i.e., no regard for fundamentals/technicals)
  - Analyze fundamentals/technicals to add additional “discretionary” hedges
4. Bid out hedges to at least two banks...negotiate forward points off set spot rate
5. Establish hedge documentation to achieve cash flow hedge accounting
6. Allocate hedge results to subsidiaries on monthly basis

# Tactical Approach- Rolling and Layering

- VF utilizes a rolling and layering approach that is automated, but leaves some room for discretion
- Hedge ratio capped at 80% to avoid over hedging and retain some volatility exposure



\* Prior 12 months hedged at 80%

# Correlation Impact

- The correlations among currencies in the portfolio help create a natural hedge:

**Correlations**

	<b>MXN</b>	<b>CAD</b>	<b>PLN</b>	<b>GBP</b>	<b>EUR</b>
<b>MXN</b>	1.00	0.46	0.71	0.29	0.36
<b>CAD</b>	0.46	1.00	0.45	0.46	0.52
<b>PLN</b>	0.71	0.45	1.00	0.48	0.72
<b>GBP</b>	0.29	0.46	0.48	1.00	0.65
<b>EUR</b>	0.36	0.52	0.72	0.65	1.00

- MXN's correlation with European currencies has a dampening impact on volatility in a consolidated USD portfolio

# Understanding True Exposure

- Adjusted for correlation between currency pairs, VF faces \$130 million of FX risk annually

<i>USD Millions</i>	[1]	[2]	[3]	[4]	[4]
Currency	Volatility	Long / (Short)	Portfolio Risk Contribution	Worst case w/out Correlation	Worst case w/Correlation
MXN	16%	(180)	-6%	47	-7
CAD	12%	150	13%	29	17
PLN	21%	50	8%	17	10
GBP	13%	230	30%	48	39
EUR	15%	320	<u>55%</u>	<u>78</u>	<u>71</u>
<b>Total</b>		<b>570</b>	<b>100%</b>	<b>219</b>	<b>130</b>

Notes:

[1] 1-year forward looking volatility

[2] Net position relative to USD; total EUR exposure is adjusted for offsetting positions

[3] Weighted average contribution to total exposure; adjusted for correlation and volatility

[4] Based on 95% confidence using normal distribution

- ~\$90 million of risk is eliminated just through correlation and the short MXN position, which generates a gain when the rest of the portfolio has losses

# Exposure Reduction

- An 80% hedge ratio for each currency pair further reduces exposure by over \$100 million annually

<i>USD Millions</i>	[1]	[2]	[3]	[4]	[4]
Currency	Volatility	Long / (Short)	Portfolio Risk Contribution	Worst case w/out Correlation	Worst case w/Correlation
MXN	16%	(36)	-6%	9	-1
CAD	12%	30	13%	6	3
PLN	21%	10	8%	3	2
GBP	13%	46	30%	10	8
EUR	15%	<u>64</u>	<u>55%</u>	<u>16</u>	<u>14</u>
<b>Total</b>		<b>114</b>	<b>100%</b>	<b>44</b>	<b>26</b>

Notes:

[1] 1-year forward looking volatility

[2] Net position relative to USD; total EUR exposure is adjusted for offsetting positions

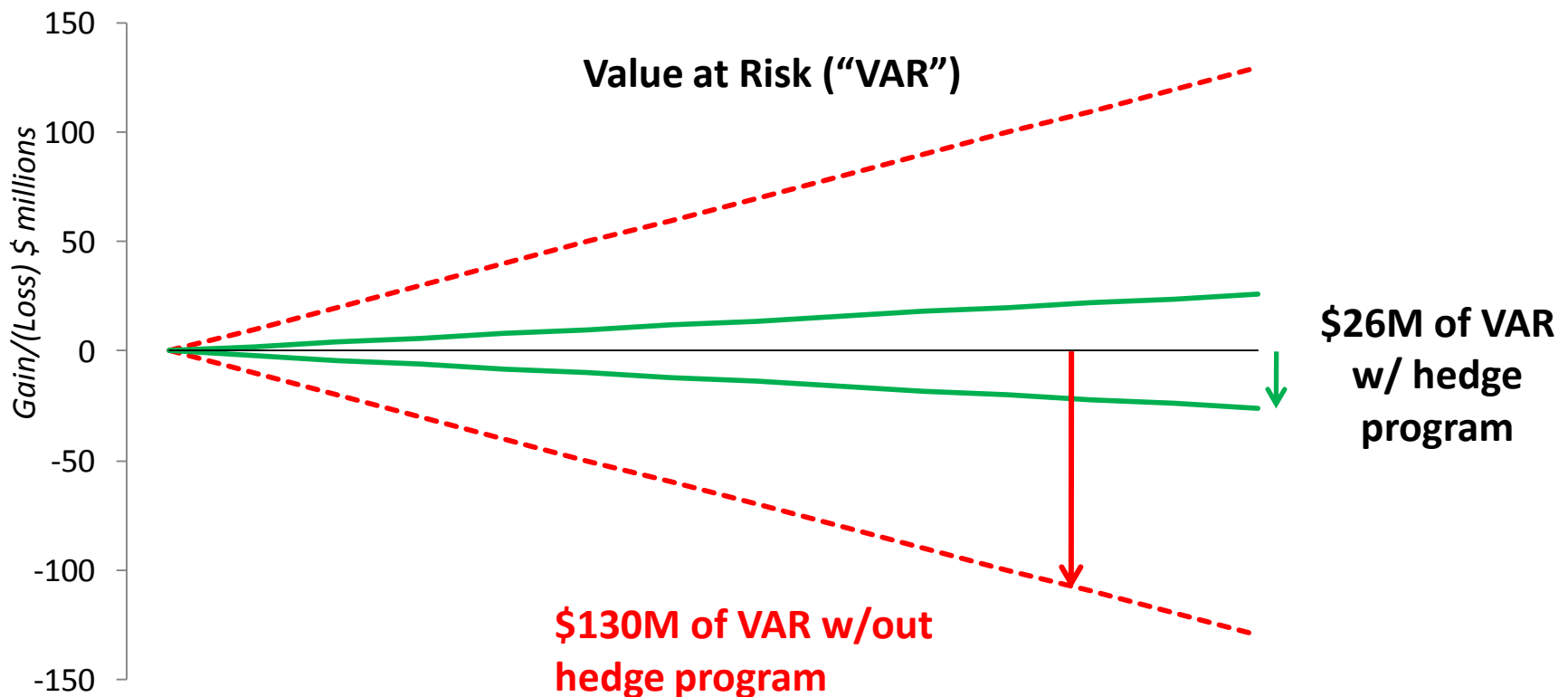
[3] Weighted average contribution to total exposure; adjusted for correlation and volatility

[4] Based on 95% confidence using normal distribution

- Netting positions, correlation and active hedging greatly reduce exposure by over \$100 million, or ~\$.70 per share annually

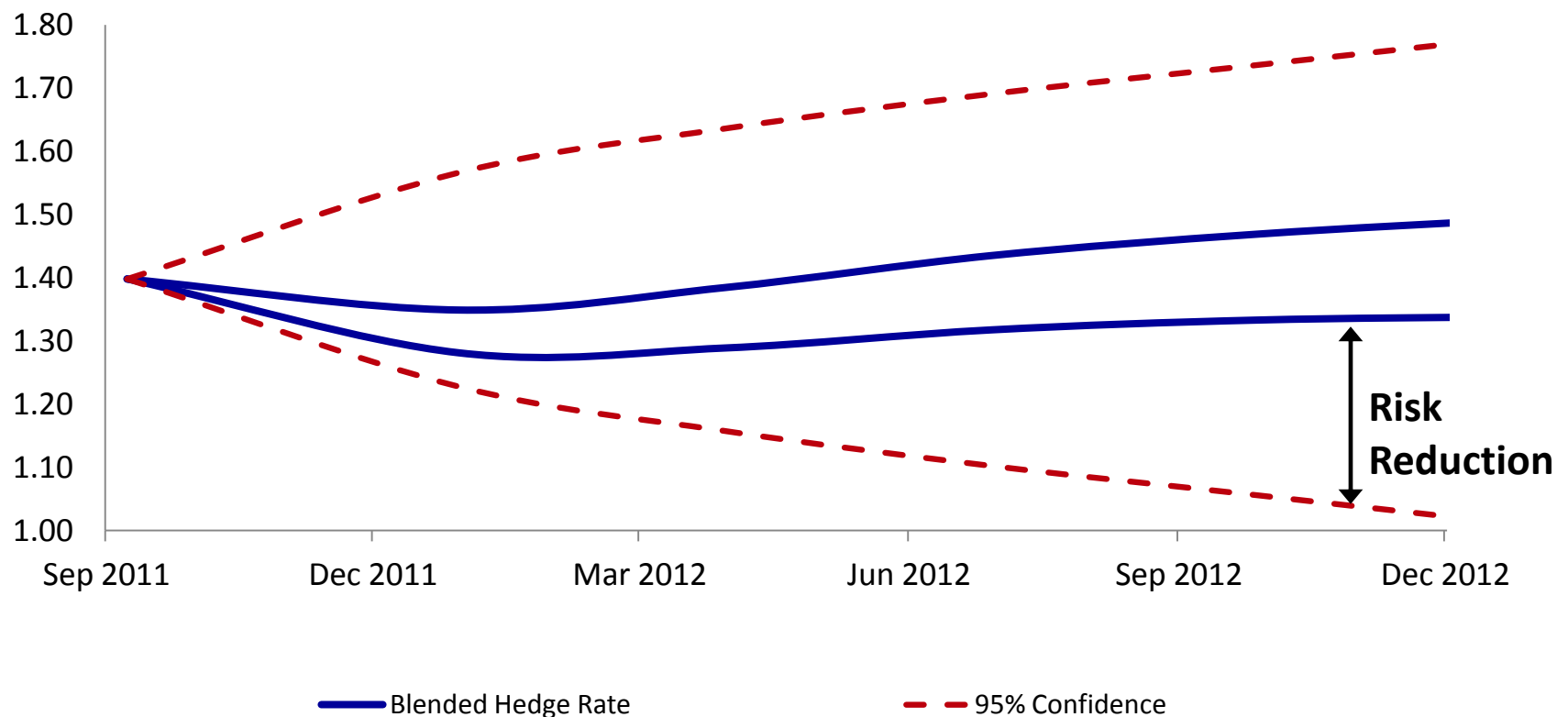
# Graded on Volatility Reduction

- Through hedging, VF has greatly reduced the potential for significant loss due to volatility in FX Rates:



# EUR/USD – 2012 Hedge VaR Analysis

- Although the EUR can potentially approach 1.00 by the end of 2012, VF will transact at no worse than 1.30 on its short USD position:



# Refining the Program

- Add use of FX options to participate in upside without putting company at risk (i.e., more participation in upside)
- Move to a netting model?
  - One legal entity takes on ALL FX risk for company
  - Auto netting like-kind exposures to reduce size and frequency of trading while retaining hedge accounting
- Implement new automated FX management system
  - Accounting for all trades
  - Hedge documentation effectiveness testing
  - MTM values and ineffectiveness measurement
  - Trading links with banks

# Questions

Contact Information:

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